JOURNAL
OF THE
AMERICAN VETERINARY MEDICAL ASSOCIATION

Present Knowledge and Concepts of Leptospirosis in Farm Animals — *Karl R. Reinhard* 487

Evaluation of Plans for Combination Animal Hospitals 493

SURGERY AND OBSTETRICS

Use of Progesterone to Control Habitual Abortion in Cattle—*E. A. Woelffer* . 505

An Operation to Preserve the Continuity of the Hip Joint—*A. T. Knowles; Jack O. Knowles; Robert P. Knowles* 508

The Tampon Method of Collection and the Examination of Cervicovaginal Mucus for Vibrio Fetus Agglutinins—*W. N. Plastridge; H. L. Easterbrooks; L. F. Williams* 516

Treatment of Hydrops Amnii with ECP®—*F. J. Milne* 520

CLINICAL DATA

An Examination of the Valves of the External Jugular Veins of the Ox with Reference to the Selection of a Site for Venipuncture—*R. A. Kainer and W. M. Dickson* 523

Treatment of Acute Lead Poisoning in Calves with Calcium Disodium Ethylenediaminetetraäcetate—*L. W. Holm; E. A. Rhode; J. D. Wheat; Gladys Firch* 528

An Evaluation of Medicaments for Removing Fringed Tapeworms from the Livers of Sheep—*O. Wilford Olsen* 533

Canine Nocardiosis—A Report of Two Cases—*R. F. Cross; W. T. Nagao; R. H. Morrison* 535

EDITORIAL

Chlorophyll Facts and Fantasies 540

NEWS FROM WASHINGTON 548

(Contents continued on adv. pages 2 and 4)

Volume 123 DECEMBER 1953 Number 921

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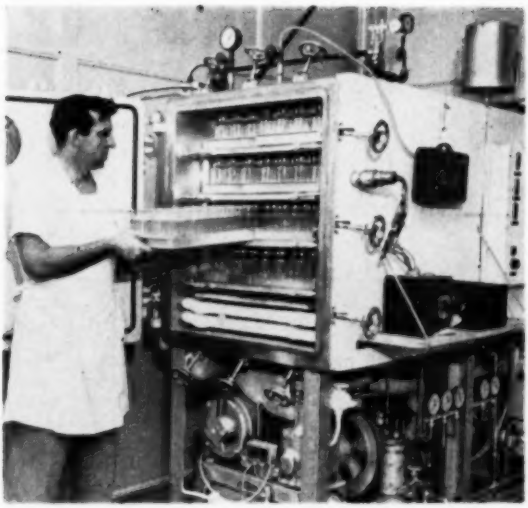

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CONTENTS

(*Continued from Cover*)

SURGERY AND OBSTETRICS

Cardiac Resuscitation 507
A Case of Ovarian Pregnancy 507
Hernial Repair with Tantalum Mesh 507
Effect of Season on Dairy Bulls 507
Ruptured Bladder in an Aged Bitch 515
Corticoids and Parturient Paresis 515
Urea for Pregnant Ewes 515
Effect of Growth Stimulators on Blood Clotting in the Chick 515
Uterotubal Insufflation in the Cow 520
Anesthetics for Domestic Fowl 520
Dangers of Hypodermoclysis 522
Furacin-Soluble Powder for Wounds 522
Sepsis from Surgical Linen 522
Congenital Diaphragmatic Hernia 522
Vasectomy of Brahman Bulls 522
Animal Birth Control 522
Vitamin B_{12} and Fertility in Sows 522

CLINICAL DATA

Salmonellosis in Foals 526
Control of Salmonellosis in Mice 526
Laryngotracheitis in Australia 526
Success in Foreign Rabies Control 527
Immunology in Aujeszky's Disease 527
Bacilli Which Need Drugs to Grow 527
Bracken Poisoning in Cattle 527
The Anthrax Bacillus and Antibiotics 527
Incidence of Fowl Typhoid and Its Control 527
Tetanus of Intestinal Origin in Man 534
Edema Disease in Swine 534

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CONTENTS—Continued

Losses from Dipping Sheep 534
Listeriosis in the Chinchilla 534
Myxomatosis in Europe 536
More About Myxomatosis in Rabbits 536
An Experiment in Milking Sows 536
Ringworm of Cattle and Man 536
Action of Antibiotics on Virus 536
Improving Johnin by Fractionation 537
Leptospirosis of Goats in Israel 537
Tick Transmission of Leptospira 537
French Moult in Budgerigars 537
Parasites and Built-Up Litter 537
Setting Standards for Syringes 537
Lead Arsenate with Phenothiazine 537

NUTRITION

Twins Reveal Nutrition Secrets 538
Vitamin B_{12} Requirement of Dairy Calves 538
Arsonic Compounds in Nutrition 538
Fright Disease in Dogs and Allergy in Man 538
Vitamin B_{12} in Milk of Pastured Cows 538
Cobalt Salt in Lamb Rations 538
A Protein Factor for Lactation 539
Chemical Improvers of Flour 539
Less Vitamin B_{12} in Goat's Milk 539
Effect of Detergent on Chick Growth 539
Environment versus Antibiotics 539
Antibiotics and Duck Growth 539
Implanting Antibiotics in Baby Pigs 539
Commercial Algae Foods Predicted 539

EDITORIAL

"Mistakes I Have Made" 541

CURRENT LITERATURE

ABSTRACTS

Essentiality of the Bovine Corpus Luteum of Pregnancy, 542; Isolation Units for Growing Baby Pigs Without Colostrum, 542; Multiple Schwannomas of Cattle, 542; Effects of Aureomycin and Other Compounds on Horse Strongyle Larvae, 542; English Sparrow as a Spreader of Newcastle Disease, 542; Calcium, Potassium, and Magnesium in Dairy Calves, 543; Action of Hypochlorite and Other Disinfectants on Micrococci, 543.

FOREIGN ABSTRACTS

Transmission of Capacity to Produce Antibodies, 543; Toxicology of Thallium, 543; Dihydrostreptomycin in Gastroenteritis in the Cat, 543; Effect of Neomycin on Pathogenic Organisms in Intestines, 543; Framycetin, New Antibiotic Isolated from Streptomyces Lavendulae, 543; Treatment of Pyometra in Dogs, 544.

BOOKS AND REPORTS

Diseases of the Eye, 544; Advances in Veterinary Sciences, 544; Guide to the Dissection of the Dog, 545; Sulfonamides and Antibiotics in Man and Animals, 545.

THE NEWS

Second Pan American Veterinary Congress to Be Held in Sao Paulo, Brazil 546
Enrollment in Colleges of Veterinary Medicine, 1953-1954 549
National Science Foundation Announces 1954-1955 Fellowships 549
Student Chapter Activities 550
Women's Auxiliary 550
Applications 552
Commencement 553
U. S. Government 553
Among the States and Provinces 554
Foreign News 561
Marriage 562
Births 562
Deaths 562

MISCELLANEOUS

A Tribute to One of America's Greatest Veterinarians, 493; U. S. Livestock Sanitary Association—1953 Meeting, 494; A California Calf Factory, 497; The World's First Transparent Dog, 497; Hybrid (Shorthorn-Deer) Calf (illus.), 541.

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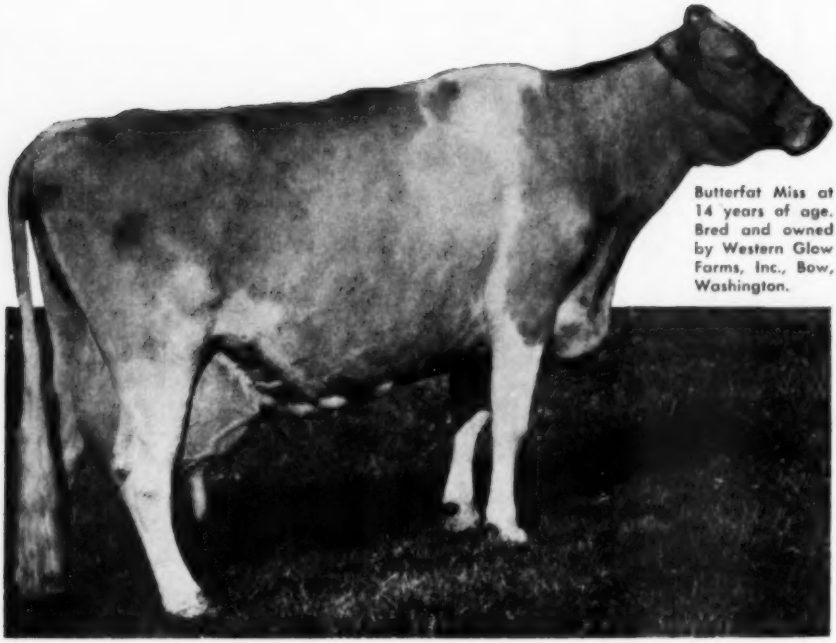

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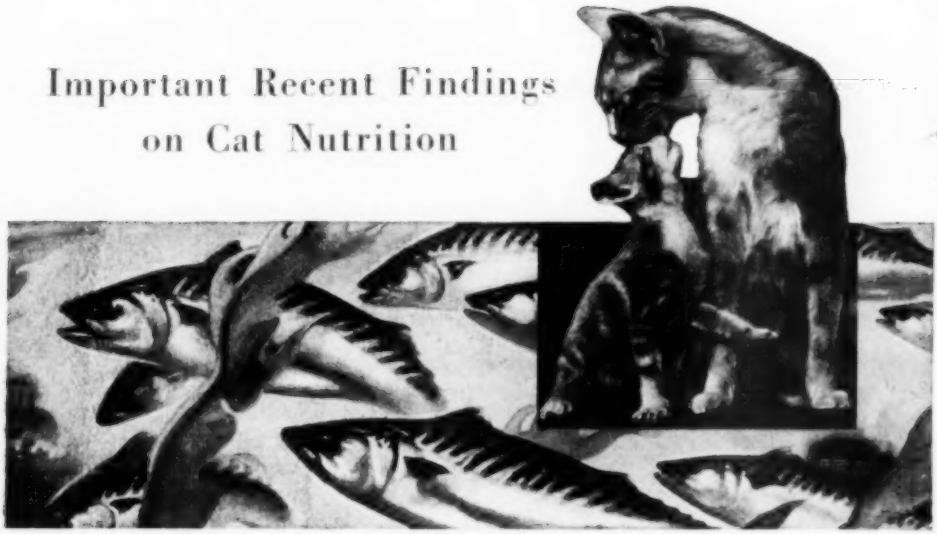

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AVMA ☆ Report

Veterinary Medical Activities

✤ The Board of Governors (Executive Board Chairman Edwin Laitinen, President J. A. McCallam, President-Elect A. H. Quin) and Assistant Executive Secretary H. E. Kingman, Jr., were in Washington, D. C., on October 22 and 23 for conferences to determine what effect the proposed reorganization of the U. S. D. A. will have on veterinary services conducted by the Bureau of Animal Industry. Interested persons and organizations were given until November 1 to file statements regarding the reorganization plan which was announced by Secretary of Agriculture Benson on October 14.

* * *

✤ The Council on Education held its regular fall session at Association headquarters on November 24. On the previous day, the Association was host to representatives of the councils on education of the A.M.A., A.D.A., and the A.V.M.A., which meet informally a few times each year to discuss mutual problems of inspection and accreditation.

* * *

✤ President McCallam and Executive Secretary Hardenbergh represented the Association at the "Greenbriar Conference" in White Sulphur Springs, Va., October 31 and November 1, which is attended by representatives of business, industry, and professional associations.

* * *

✤ Editor-in-Chief Aitken spoke on "Animal Disease and the Farmer" before the annual convention of the National Safety Council which was held in Chicago, October 19 to 25.

* * *

✤ President J. A. McCallam participated in the program of the annual meeting of the Southern V.M.A. held in Atlanta, November 9 to 11.

* * *

✤ President-Elect A. H. Quin attended and took part in the programs of the Florida V.M.A. meeting in Daytona Beach, October 18 to 20, and of the Interstate V.M.A. in Sioux City, Iowa, October 29 and 30.

* * *

✤ Assistant Executive Secretary Kingman represented the Association at a meeting of the Council on National Emergency Medical Service of the American Medical Association on October 31.

* * *

✤ Drs. Hardenbergh and Kingman were in Seattle during the latter part of November for a meeting with the Committee on Local Arrangements for the 1954 convention and also met with some of the Section Officers to plan the scientific program for the meeting.

* * *

✤ President J. A. McCallam was elected to the board of directors of the National Health Council at their meeting held in New York City, Oct. 13, 1953.

* * *

✤ Dr. Robert Getty represented the AVMA at the Medical Audio-Visual Institute of the Association of American Medical Colleges held in Chicago, November 20.

* * *

✤ The Board of Governors filed a written opinion with Secretary of Agriculture Benson on Oct. 27, 1953, objecting to the status of Animal Disease Research in the reorganization of the U.S.D.A. (*See* p. 548.)

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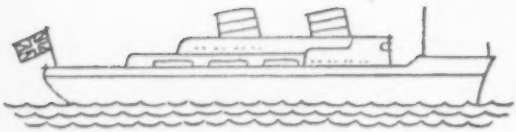

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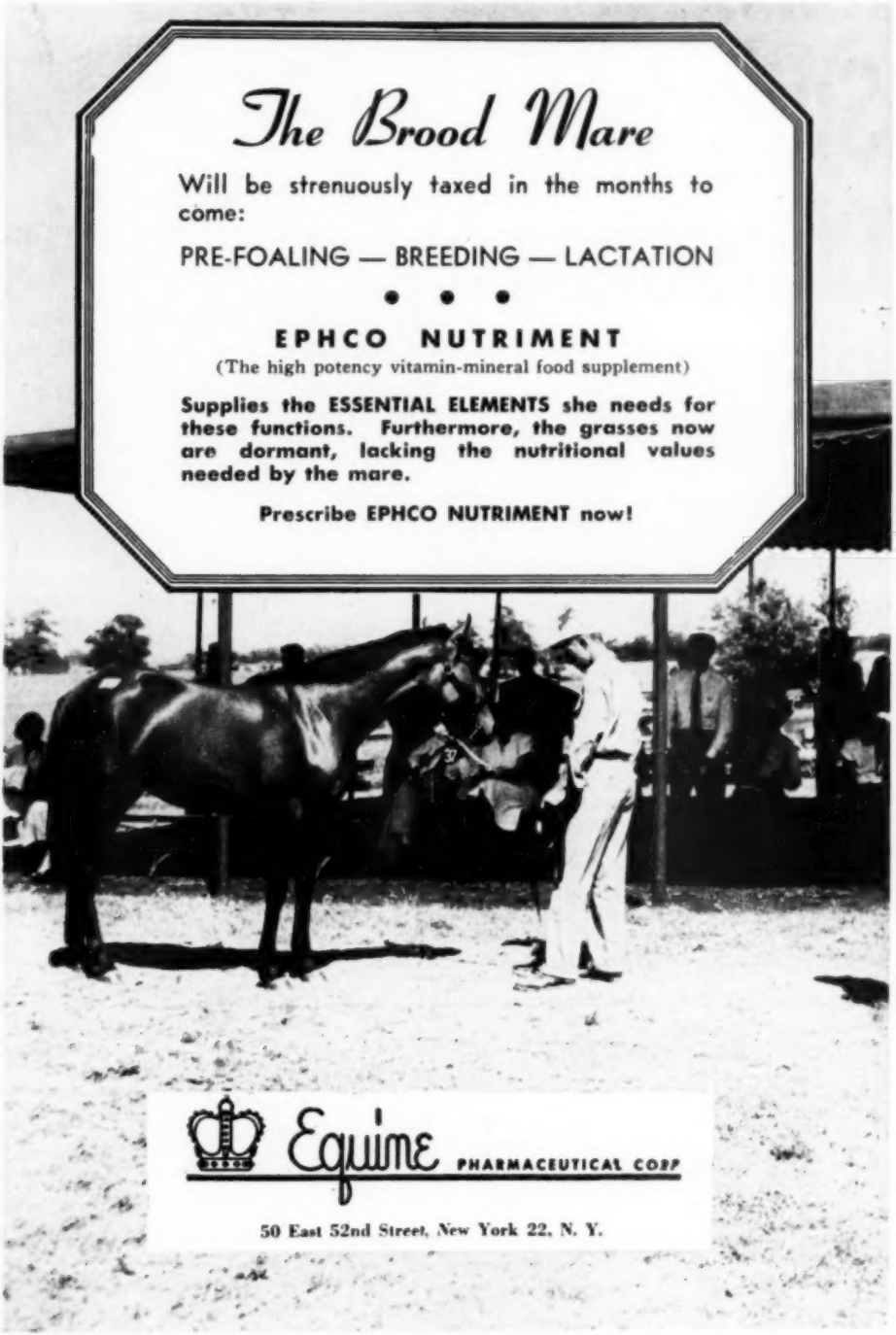
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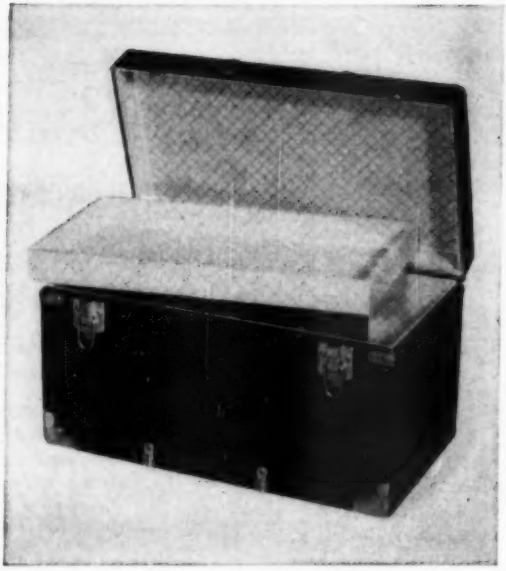

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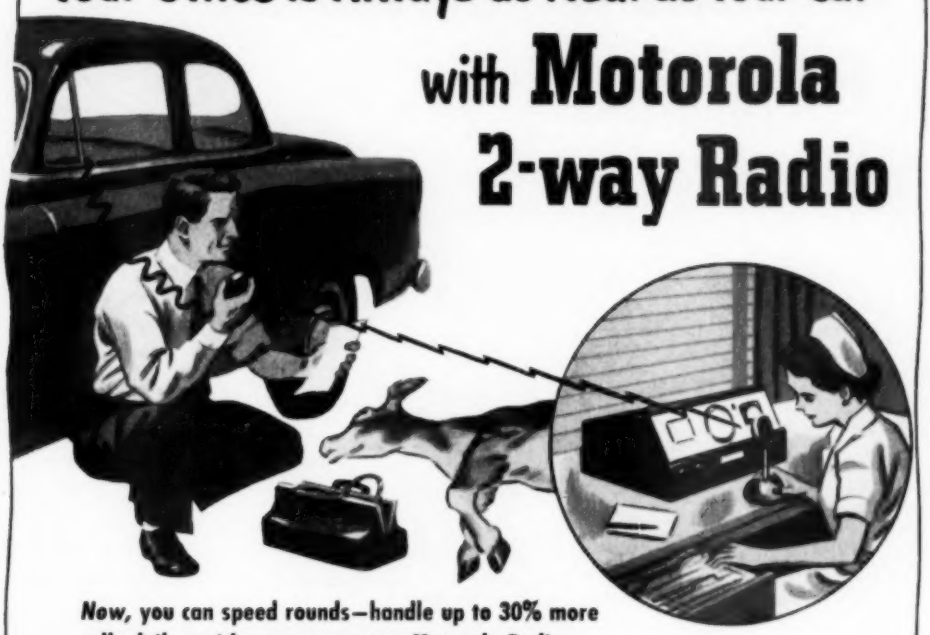

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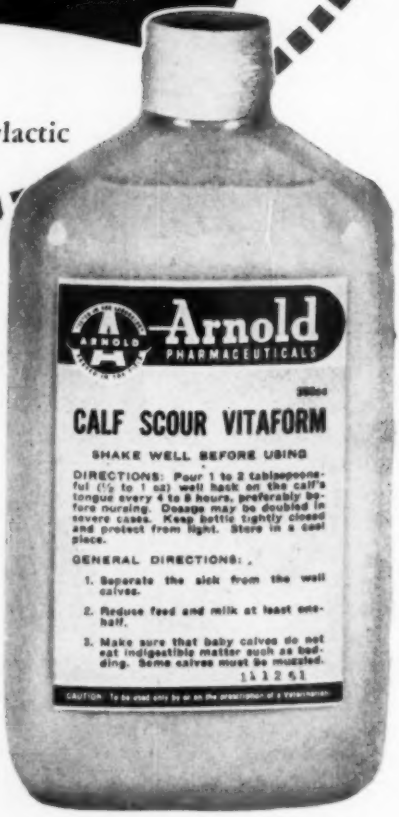
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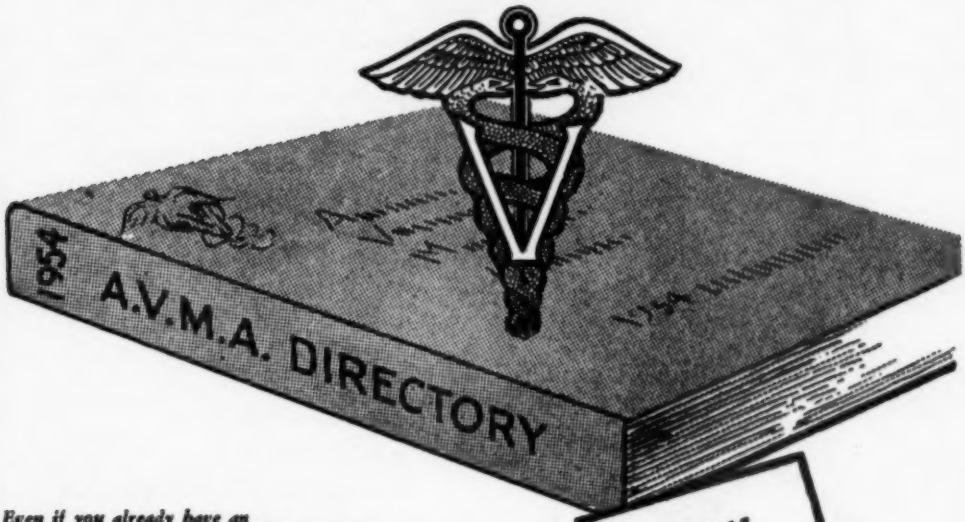

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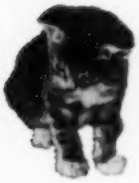

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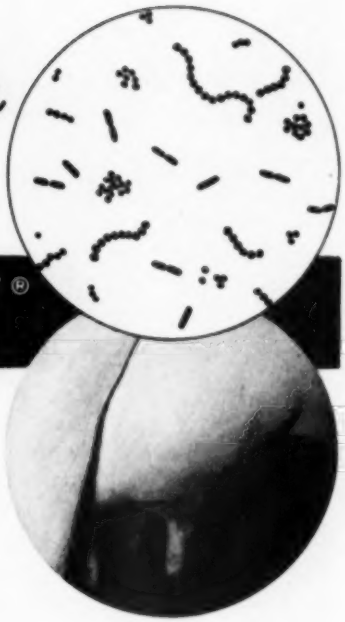

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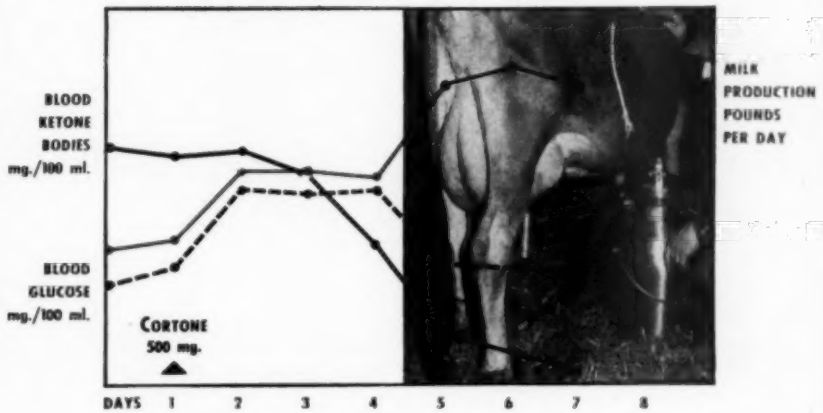

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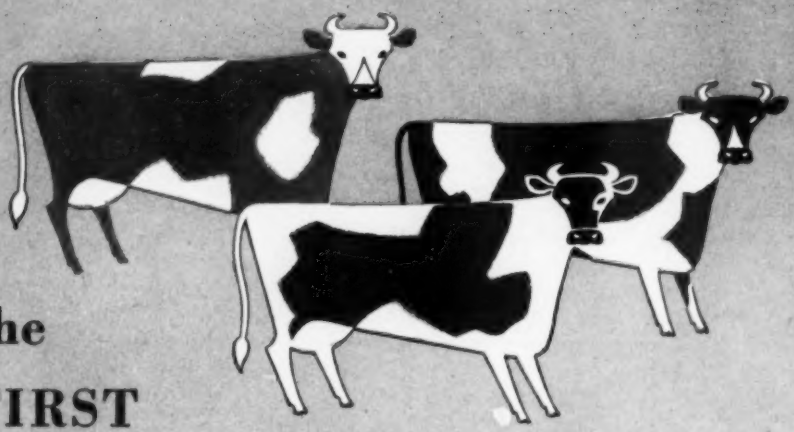

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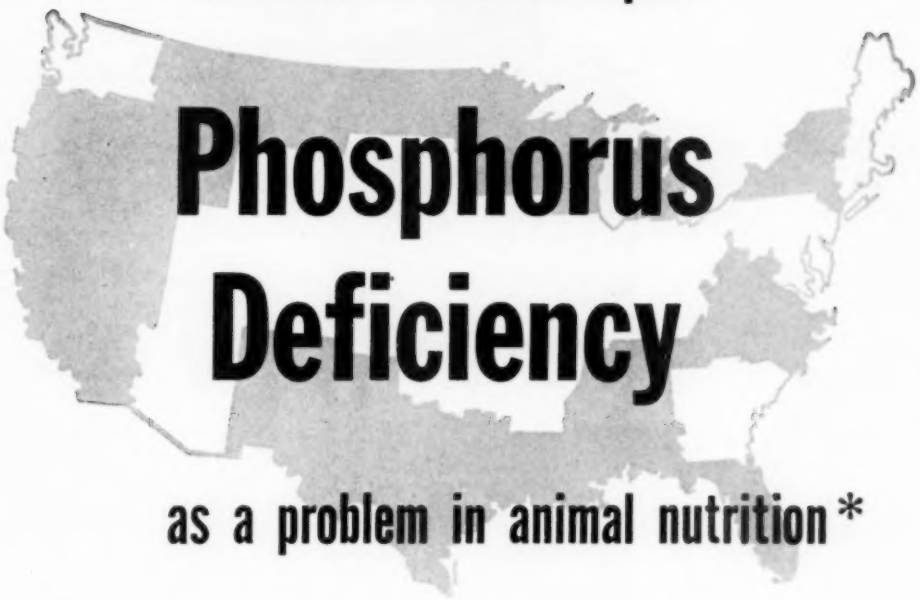

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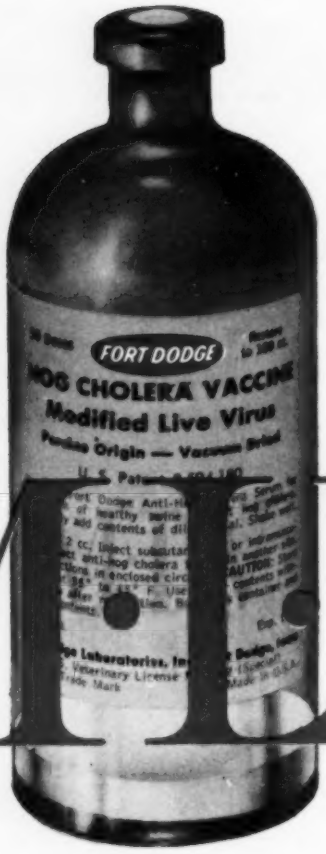

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VOL. 123 DECEMBER, 1953 No. 921

Present Knowledge and Concepts of Leptospirosis in Farm Animals

KARL R. REINHARD, D.V.M.

Hamilton, Montana

LEPTOSPIROSIS was first reported in farm animals in this nation less than a decade ago. Even five years ago, the American veterinary profession had little knowledge of leptospiral infection of cattle, swine, and horses. But today, we know of the existence of bovine leptospirosis in at least 40 states, of widespread porcine leptospirosis in the hog-raising regions, and of equine leptospirosis. In five years, our concept of leptospirosis has changed from one of a sporadic, almost exotic ailment, to that of a disease of prime economic and animal health importance and a definite, but undelineated, public health problem.

Exact knowledge of the incidence and economic importance of leptospirosis has not been gained because of the lack of diagnostic facilities. The burden of serological confirmation of the thousands of cases in cattle, horses, and hogs which have been found in the past four years has been borne mostly by a few small laboratories engaged in leptospirological research. Even at present, few of the nation's veterinary diagnostic laboratories are performing routine serodiagnosis for this disease.

Leptospirosis robs the animal husbandman in a number of ways: by loss of calf or pig crops due to abortion, loss of young and adult animals in death from hemolytic anemia, loss of meat production due to stunting or poor weight gain, loss of milk due to decreased or interrupted lactation, and the loss caused by the maintenance of unproductive animals.

On the veterinary medical side, we are dealing with a condition not clearly affected by any of the medicaments at our disposal, a disease disseminated over extended periods by chronic renal carriers, which is difficult to control by ordinary hygienic measures, and for which no proved immunization procedure exists.

The public health workers are faced with a problem much like that of brucellosis. It will be necessary to separate leptospirosis from the etiologically undefined human ailments, and then develop methods to prevent the transmission of the disease from the animal reservoirs to man.

These facts call for an intensive, coöperative investigation of the problem by the veterinary profession, livestock sanitarians, and public health services. Fortunately, the groups concerned have not been idle. The American Veterinary Medical Association and the U. S. Livestock Sanitary Association have made official recognition of this disease. Both the Army Medical Center and the U. S. Public Health Service have been engaged in research activities on leptospirosis for the last few years, and several of the more progressive state research groups have started independent investigations. With the increased countrywide interest, more research programs are to be anticipated and should eventually bring solutions to many of the problems of leptospirosis.

By far the most commonly detected agent of bovine, porcine, and equine leptospirosis is *Leptospira pomona*,[10] which was first isolated in Australia[6] in 1942, and later in Switzerland.[11] Within the last year, bovine infections have been found which, according to serological tests, were

From the Communicable Disease Center activities at the Rocky Mountain Laboratory, National Microbiological Institute, National Institutes of Health, Public Health Service, Hamilton, Mont.

Presented at the Wisconsin Veterinary Conference, June, 1953, Madison, Wis.

caused by a member of the *Leptospira hebdomadis* serogroup,[12, 17, 18] possibly *Leptospira sejroe*, an organism originally recovered from human and field mouse infections in Denmark.[4] In Georgia, in the late summer of 1952, a local outbreak of leptospirosis occurred, which was caused by *Leptospira canicola* and involved people, cattle, hogs, and dogs.[11] In addition, it is known that *Leptospira icterohaemorrhagiae, Leptospira autumnalis,*[3] *and Leptospira ballum*[7, 18] are present in the United States. There are serological indications of the presence of *Leptospira grippotyphosa*[16, 19] and *Leptospira bataviae*.[9] This list undoubtedly will be augmented. However, the present bovine and porcine problem principally involves *L. pomona*.

SYMPTOMATOLOGY

The signs and symptoms of the leptospiroses are greatly varied, making physical diagnosis difficult and, at times, impossible. Table 1 presents the principal items of the symptomatology of bovine leptospirosis.

Fever, depression, anorexia, and diarrhea are often the first signs noticed in animals which are closely supervised. The temperature may rise as high as 107.0 F., but more generally it stays between 103.0 F. and 105.5 F., lasting two to five days. Anorexia and diarrhea are most marked at the febrile period and usually are transitory. Depression may continue into the convalescent stage in the more severely affected animals. Hemoglobinemia, hemoglobinuria, and icterus result from rapid hemolysis. If the hemolysis takes place slowly, gross signs of blood pigment retention do not occur. In young animals, blood hemoglobin can be reduced in a few days from a normal of 12 to 14 Gm./100 ml. of blood to as low as 6 Gm., without evident hemoglobinuria or icterus. However, there may be considerable proteinuria in these cases.

Since hemoglobinuria is the end result of hemolysis, and is dependent upon the rate of blood destruction, it does not occur at any definite chronological point in the course of the disease. It has been found as early as the febrile period, or ten or twelve days later. The intensity of hemoglobinuria and icterus, if they occur, is not constant from case to case; depending, again, upon the rapidity of onset and degree of hemolytic anemia. These signs have not occurred at all in some proved enzoötics of bovine leptospirosis.

Physical weakness is more evident in the cases with severe anemia, and may persist for weeks. Weakness may not be exhibited until the patients are forced to unaccustomed exercise; then they may collapse from exertion and die.

One of the more characteristic signs of leptospirosis during the acute phase of infection in lactating cows is reduced or interrupted milk production. The milk usually becomes yellowish and thickened or may be bloody. Full production may return, but slowly. Often, the animal does not reach the production peak maintained before infection. Generally the udder is flabby, but concurrent bacterial mastitis may obliterate that sign.

Abortion apparently occurs occasionally in the acute stage of the disease. The fetuses may have edematous umbilical cords and membranes. The cord may break close to the body and the umbilical opening may

TABLE 1—Principal Signs of Bovine Leptospirosis

Symptom or sign	Likely time of onset	Probable duration	Remarks
Fever	1 to 2 weeks after infection	3 to 5 days	Peak of 104 to 107 F., usually nonrecurrent
Anorexia	Time of fever	1 day to 1 week	Usually quite transitory
Depression	Prefebrile or febrile period	1 day to 1 to 2 weeks	Dependent upon severity of infection
Diarrhea	Febrile period	Few hours or several days	Watery, usually not fetid
Anemia	Prefebrile period	5 or 6 weeks	Hemolytic type
Icterus	Near time of fever	1 to 3 weeks	Most marked in severe cases
Hemoglobinuria and hemoglobinemia	Febrile period to 7 or 10 days later	Few hours to several days	Degree depends upon severity of hemolytic anemia
Oligogalactia or agalactia	Febrile period	Few days	Thickened, yellowish milk. Full production may not be gained for several weeks
Weight loss	Febrile period	1 to several weeks	May retard growth in calves
Abortion	Acute stage		More liable to occur after mid-term
			Membranes and fetus pathologic. Cow may have subsequent breeding difficulty

From "Bovine Leptospirosis", Army Medical Center Symposium on Leptospirosis, December, 1952.

be large. The cows that abort may have subsequent breeding difficulties.

Weight loss is frequently encountered, and affected young animals may actually be stunted. Two-year-old cattle scarcely larger than normal 6-month-old calves have been found in herds where a high incidence of leptospirosis existed. Severely affected adults may not regain their normal weight for several months.

Rarely do all these signs occur in one individual, but all of them might be found among the cases in one herd. In this instance, the diagnosis is made easily. The most difficult problem in diagnosis is found in the herd that shows only the type of infection manifest by unthriftiness or abortion. Laboratory serodiagnosis is required in such outbreaks.

Porcine leptospirosis is a poorly delineated clinical entity. Poor weight gain, meningitic symptoms (incoördination, circling, and hyperirritability), and abortion have all been associated with the presence of Leptospira organisms or serum antibodies against these organisms in the subjects. The Illinois group[5] has recovered leptospiras from aborted porcine fetuses. However, the truer picture of leptospirosis in hogs awaits the experimental production of uncomplicated infection. Several workers have found that apparently normal hogs may have chronic leptospiral nephritis and shed enormous numbers of leptospiras in the urine.[3,18] Therefore, finding the organisms in the kidneys or urine of hogs which are showing clinical signs of disease does not necessarily mean that the clinical illness is due to leptospiral infection.

Leptospira pomona has been recovered from horses with febrile illnesses.[14] It is also well known that antibodies against *L. pomona* have been found in the serums of many horses having a history of recurrent iridocyclitis (periodic ophthalmia).[20]

Clinical syndromes caused by leptospiras have not been found thus far in sheep and goats. However, the occurrence of ovine and caprine leptospirosis abroad suggests that it may occur in this country.

Comprehensive information upon the pathology of bovine, porcine, and equine leptospirosis is not yet available. In cattle, the acute phase is marked principally by minute areas of focal necrosis in the liver and acute interstitial nephritis. Hemolysis may lead to hemosiderosis in the kidney, liver, and spleen. Some acute or fulminating cases may show widespread petechial and ecchymotic hemorrhages. Hemorrhages may be present in the kidneys and lungs of some acute cases. The chronic cases of bovine and porcine leptospirosis usually show chronic, focal, interstitial nephritis (white-spotted kidneys).

DIAGNOSTIC METHODS

The most useful laboratory tool for confirmation of the diagnosis of leptospirosis is that of serology. Because of their tediousness, culture methods do not serve as well in routine diagnosis as in research studies. Histopathological demonstration of leptospiras is not entirely reliable and, moreover, is time-consuming. The search of bovine urine or organ emulsions for direct microscopic detection of leptospiras is usually disappointing. Hogs are more likely to have large numbers of the organisms in the urine. In any event, identification of leptospiras in body fluids or organ emulsions should be performed only by workers who are thoroughly familiar with their appearance—and of pseudospirochaetes.

The most widely used serological test is that of microscopic agglutination-lysis. This test employs the minimum of reagents and is easily set up. It is sensitive, sometimes detecting specific antibodies in serum dilutions of 1:100,000 or 1:1,000,000. The test is species-specific; therefore, broad surveys require screening against a battery of antigens. The agglutinating antibodies persist for years in animals which have been infected, making this test of extreme value in epizoötiological studies.

The Army Medical Center has developed a complement-fixation test which has been extensively standardized.[19] This test is group-specific—crossing species boundaries—and can serve as a screening test for a number of species. Since the complement-fixing antibodies of an animal usually disappear within two to four months after leptospiral infection, this test is of limited value for epizoötiological studies except to indicate more recent infection. The laboratory using complement-fixation as a screening test must resort to the agglutination test for identification of the species of Leptospira. The serums of certain animal species tend to be anticomplementary, preventing the use of the complement-fixation test. Mishandling of serum in collection, or ship-

ping, may also cause it to become unfit for this test.

In reference to the reliability of the complement-fixation and agglutination-lysis tests, both are reliable but both can be invalidated by technical incompetence. The choice of a test, therefore, does not rest upon the matter of reliability but rather upon the objectives and facilities of the laboratory involved in the testing. The agglutination-lysis test is particularly valuable for its species-specificity and long retrospect. The complement-fixation test is useful for its broad spectrum. At present, the well-standardized antigen of the Army Medical Center is not available commercially. An antigen which was put out commercially some months ago still has not been standardized in relation to its spectrum of activity nor compared adequately with the agglutination-lysis test. Neither the complement-fixation nor the agglutination-lysis test, nor both of them together, are equal to the needs of the greater study of leptospirosis. A plate or tube test of high sensitivity and reliability, which can be placed in every brucellosis and diagnostic laboratory, is needed to allow more extensive surveys and rapid diagnosis. Both a cholesterol-adsorbed plate-test antigen[18] and a capillary-tube agglutination test[16] have been announced, but their recent development has not permitted widespread trial and evaluation of the techniques.

EFFECTIVENESS OF THERAPEUTIC MEASURES

There are a number of reports of the common antibiotics exerting a beneficial effect in the treatment of leptospirosis. Yet, controlled clinical trials in the therapy of human cases indicate that none of the common antibiotics have any appreciable effect upon the course of leptospiral infection. Veterinary practitioners who have analyzed critically the effects of antibiotic therapy upon the course of severe leptospirosis have generally found the common antibiotics to be ineffective. Yet, there are reports which state that after a course of treatment with penicillin, streptomycin, or chlortetracycline (aureomycin), fever, hemoglobinuria, icterus, and other leptospiral signs disappeared. However, the fact that fever and hemoglobinuria can disappear abruptly, while the anemia and icterus can remit gradually in untreated cases of leptospirosis must not be overlooked. Critical studies of the course of leptospirosis give the definite impression that by the time an animal reaches the stage of hemoglobinuria and jaundice, most of the physiological damage has been accomplished and the animal is probably destined to die, or recover, with or without the help of antibiotics.

The logical time for the employment of antibiotic therapy is early in the course of the disease. When a veterinarian is called to attend an affected animal showing anemia, jaundice, and associated signs, it is more logical to give that patient supportive treatment, including adequate blood transfusion. The remainder of the herd should then be screened for febrile animals and these given courses of antibiotic therapy. To evaluate the effects of antibiotic treatment in advanced cases, it would be well for practitioners to use supportive therapy on half of their cases and antibiotics on the other half. Careful records on the course of these cases should give us valuable therapeutic information. These statements are not intended to discourage the use of any drug in the therapy of leptospirosis but to ask for more careful and conservative interpretation of results.

PROPHYLACTIC PROSPECTS

Studies of bio-prophylaxis of leptospirosis are only in the experimental stage. A vaccine has been reported recently, but critical evaluation of the report discloses some serious deficiencies in proof.[21] First of all, the response was evaluated immunologically only by titer against specific antigen. Second, the test animals were challenged two to six weeks after vaccination. In addition to being an inadequate pre-challenge period for indication of practical field use, this period covers the time when animals have maximum response to any antigen given parenterally. On challenge, the efficiency of vaccination was evaluated only by difference in febrile response between vaccinates and controls. Now, it is known that animals can be infected, experience leptospiremia, develop renal foci and leptospiruria, all without showing a febrile response at any time.[12] Therefore, any evaluation of a vaccine should include adequate bacteriological demonstration of protection against infection in the vaccinated animals, and bacteriological demonstration of infection in susceptible controls. Serological evaluation must be based upon protection tests and not

only antigen–antibody reaction *in vitro*. It has been demonstrated many times in the study of other diseases that the amounts of circulating, agglutinating, precipitating, or complement-fixing antibodies are not true measures of protection or immunity.

The evaluation of a vaccine in the field will be even more difficult than in the laboratory. First, it will be necessary to conduct field tests in areas where there is uniform opportunity for exposure to infection for both vaccinated animals and controls. Second, the number of susceptible controls should equal the number of vaccinated animals. Third, all animals should be tested serologically before the start of the experiment. Fourth, the subsequent performance of both groups should be followed serologically and clinically, and clinical cases should be confirmed bacteriologically. The labor of conducting field trials with adequate controls precludes the early availability of a proved immunization product.

EPIZOOTIOLOGY

Epizoötiological information is accumulating slowly. The disease is reported from all geographical regions of the United States. Breed and sex have no apparent influence upon the incidence of the disease; mortality is probably higher in younger age groups.

Climate and geography have definite effects upon animal husbandry procedures, animal population densities, and the persistence of pathogenic leptospiras in natural environment. Therefore, the weather and the land have an indirect influence upon the incidence and ecology of leptospirosis. On the high plains and mountains of the West, there is some dissemination of the disease, but explosive outbreaks have not been found in cattle on summer range. However, disastrous enzoötics occur when the animals are brought together in pastures, wintering lots, or feedlots. Then, rapidly spreading enzoötics may take place, marked by a high attack rate, abortions, and deaths, due to hemolytic anemia. Since dairy cattle and many purebred beef herds are usually kept in well-watered, lush pasture, or are concentrated in a small area or a barn, leptospirosis is likely to assume enzoötic form at any time. This is especially true of herds subject to frequent replacements. Any procedures which tend to concentrate animal populations into congested or unsanitary pastures, lots or quarters brings an increased possibility of outbreaks, especially when there is a constant flow of replacements from sales channels.

The foregoing facts apply to *L. pomona* infection which, apparently, is self-perpetuating in cattle and hog populations, chiefly because of the renal carriers. Contact with urine of acute cases or convalescent carriers, or with objects contaminated with such urine, are believed to be the factors in transmission. It is known that cattle can be renal carriers of leptospiras for as long as three months, also that pathogenic organisms can persist in natural waters for several weeks in the warmer seasons. Such factors augment the extension potentialities of an epizoötic. With the detection in cattle of types of Leptospira normally found in field mice, the potential reservoirs of the disease multiply enormously.

The route of infection is not known exactly. A theory of infection through the upper respiratory tract has been proposed.[2] It is known that infection can occur via the conjunctival sac.[1] It is also likely that leptospiras can invade the body through the respiratory, oral, and pharyngeal mucosa, the conjunctiva, and skin wounds.

Few surveys have been made of the incidence of leptospirosis. Those conducted on a random sample basis, such as the one in Illinois,[5] indicate that bovine and porcine leptospirosis have occurred in 10 per cent of the animals and in 20 per cent of the herds. These figures are much like those found in brucellosis early in the study of that disease. It is difficult to believe that leptospirosis has reached such proportions before its detection, yet there are logical reasons to believe that it has: (1) It closely resembles other diseases, or produces symptoms of undefinable character, preventing accurate diagnosis; (2) few veterinarians, bacteriologists, or physicians have been well-informed about Leptospira organisms, consequently they are considered exotic; and (3) the routine diagnostic bacteriological and virological techniques do not demonstrate leptospiras. There is good reason to believe that the disease has been with us a long time. However, no bases exist to prove whether its sudden, widespread recognition represents a real extension of the disease, or only increased awareness among the practitioners.

There is a pressing need for control—yet we lack the tools and philosophy for effec-

tive control. The philosophy of modern animal husbandry calls for "bigger and better barns" to concentrate more animals within easy reach. Yet, these same methods produce essentially unhygienic conditions—no matter how clean the floors may be—and favor the explosive spread of leptospirosis and any other contagious disease. The American agricultural scene has a hyperactive animal sales trade. This favors the dissemination of leptospirosis via the renal carrier. The veterinarian has the schizophrenic tendencies of desiring to reduce the spread of disease, and yet to advise his client to sell or trade as soon as possible those animals which have been made unthrifty by disease. As yet, we have no laboratory method which will positively detect the renal carrier, nor do we possess reliable means of recovering Leptospira spp. from contaminated environments.

Effective control awaits the development of an immunization product which will protect animals for at least a year, and which is effective against all the types of leptospirosis present in farm animals. An immunization product expected to induce protection for short periods has been predicted for control of explosive outbreaks. Our experience[12] in serological study of a number of outbreaks indicates that such reasoning is fallacious. Frequently, clearly recognizable clinical cases appear only toward the end of the enzoötic when 50 to 80 per cent of the herd has experienced infection and, therefore, can not benefit from a vaccine. Clearly, then, the need is for an immunization product to be used for routine vaccination which will protect for at least a year.

It must be emphasized that indiscriminate vaccination would complicate attempts at the control of leptospirosis as much as it does the brucellosis control program. A record and identification should be made of every animal receiving vaccine, be it the experimental vaccine of the present or proved vaccine of the future. In this way, only, can dire confusion be prevented.

Until the time when vaccines are generally available, hygienic control of leptospirosis is possible by coöperative effort of state, veterinarian, and farmer. The basic requirement is serodiagnostic service on a state level. The farmer with the serologically negative herd should make only serologically negative additions after a month of segregation and observation. The farmer with the diseased herd would do well to close off his herd to replacements for at least six months and to raise the new calves and unaffected stock in isolation from the infected herd until six or nine months after the last serologically confirmed case of leptospirosis. The farmer with the serologically positive herd might add only serologically positive (immune) animals to his herd, if it is possible to segregate the home-reared stock which is born after the outbreak. However, this procedure would keep and add carrier animals, thereby keeping Leptospira organisms on the premises. Non-infected animals should not share water supply, pasture, or feedlots with infected herds. Milk from infected herds should be pasteurized before feeding to young stock or swine or sale for human consumption. The appearance of clinical cases calls for a survey of the entire herd to detect mild or inapparent cases, for the latter otherwise may become unsuspected carriers. Stringent rodent control measures should be practiced in enzoötic areas.

In the interests of economic safety and the progressive knowledge of leptospirosis, harsh regulatory methods and undue discrimination against meat and milk products of infected herds should be avoided. Properly pasteurized milk of normal character from infected herds is acceptable for human consumption in view of the known thermal lability of leptospiras. The present Bureau of Animal Industry standards for inspection of carcasses are probably adequate for safeguarding the interests of the public in regard to bovine and porcine leptospirosis. It is more important at present that the states make an effort to define the full extent of the leptospirosis problem than to enact severe restrictions which will serve only to drive much of the disease "underground." The establishment of diagnostic services, plus instructions to the veterinarians and to the farmers in the protection of their herds against introduction of the disease, will do more for control of the disease than reporting and regulatory measures which penalize honest men.

The knowledge of the public health phase of leptospirosis lags behind the progress in the veterinary aspects. However, the gap should be filled within a few years as more practicing physicians and public health workers become aware of the problem. Because of the great animal reservoirs of

leptospirosis, we will need to apply ourselves diligently to delineate and solve the problem.

We need sharper implements for diagnosis and control. We need a thorough understanding of the basic nature of the disease and the mechanisms of infection. We need to lose our preoccupation with the individual case and to consider the herd, the locality, and geographic and climatic factors. We need actual therapeutic and prophylactic agents, not merely more saleable drugs and mixed bacterins. We need more teamwork among veterinary and public health authorities.

CONCLUSION

Leptospirosis is one of the greatest contemporary challenges to the veterinary profession. This has been realized in many areas but, unfortunately, the reaction in some instances has created a demand for immediate and complete eradication of the disease. There is some urgency in the need for control of leptospirosis, but sound development of a program can be attained only by a pause to evaluate the status quo followed by stepwise progress toward effective control.

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A Tribute to One of America's Greatest Veterinarians

Far out on Chicago's south side, in a tidy brick home on a neat, quiet street, one of our greatest living veterinarians, Dr. Louis A. Merillat, lives with his devoted granddaughter.

I paid him a visit on a recent trip to Chicago. He turned in the desk chair of his combined office and apartment with a warm smile of recognition. At the ripe age of 85, "L. A." is as mentally alert as ever. Physically, he suffers the limitations of age and his eyesight is poor.

What a marvelous panorama of memories must roll through the mind of this grand dean of veterinary medicine—the tidy farms of his boyhood in the then new country of northern Ohio . . . the tours with the family's act as a professional tumbler . . . the walks up Yonge Street in Toronto in the late eighties . . . the classes under "Andy" Smith with his mutton-chop whiskers . . . the day of graduation from O.V.C. at the age of 20 in '88 . . . the physically strenuous days of a huge Chicago equine practice . . . the mud and

travail of France in World War I . . . the day of victory and recognition by the leaders of great nations for a job well done . . . his elevation to the presidency of his state and national veterinary associations . . . the warm hand clasps of his hundreds of former students . . . all of these, and a thousand other memories, that bring satisfaction and comfort in the sunset years of his illustrous life.

Author, soldier, master surgeon, student, historian, educator, editor, leader; in my opinion, "L. A." has contributed more to the advancement of our profession than any other veterinarian.

This is the proper time for a eulogy, for all who know him can join in sincere thanks and heartfelt appreciation of this great veterinarian's influence and example.

Some of his days are lonesome days and letters from old friends are welcome. He may not reply but he will welcome your letters. You can address him at 453 East 87th Place, Chicago.—*A. H. Quin, D.V.M., Kansas City, Mo.*

U. S. Livestock Sanitary Association 1953 Meeting

The fifty-seventh annual meeting of the U. S. Livestock Sanitary Association was held in Haddon Hall, Atlantic City, N. J., Sept. 23-25, 1953, with about 250 members in attendance. Dr. T. Childs, veterinary director general, Health of Animals Division, Ottawa, presided. Officers elected for the following year are: Drs. T. C. Green, Charleston, W. Va., president; I. G. Howe, Albany, N. Y., first vice-president; H. F. Wilkins, Helena, Mont., second vice-president; and A. L. Brueckner, Hyattsville, Md., third vice-president. The 1954 meeting is scheduled to be held in Omaha.

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Canadian Disease Problems.—The recent rabies epizoötic in northwestern Canada has been present among wild predatory animals for six years. Many domestic animals were killed by rabid wolves, causing much alarm and hysteria. In the control campaign over 100,000 cases of rabies vaccine were used on dogs and other domesticated animals. Approximately 46,000 wild carnivores, from skunks to bears, were killed. The affected area was isolated by vaccinating all dogs in a 12-mile strip across the area's southern limits. No new cases have been reported since June, 1953.

Canada's first hog cholera outbreak since 1946 was present in southwestern Ontario for two weeks last June, before it was recognized. It had been spread chiefly by exposed hogs passing through sale barns, so that the disease was well established. All auction places were immediately quarantined and disinfected and 29 counties were quarantined. Farm-to-farm inspection and an educational and clean-up campaign were conducted. All infected and exposed swine were immediately slaughtered and all hogs within 1 mile of infected premises were vaccinated with hog cholera antiserum only. The disease was practically eradicated in thirty-two days. Full compensation for the 2,947 hogs slaughtered came to $72,470. The rare occurrence of hog cholera in Canada and its freedom from vesicular exanthema are evidence of the value of enforcing the garbage-cooking laws.—*T. Childs, Veterinary Director General, Canada.*

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Transmissible Diseases of Swine—Committee Report.—Less hog cholera was reported in 25 states this year, with an increase in only two states. Atrophic rhinitis had increased in 14 states, decreased in only one. Transmissible gastroenteritis had not increased in any state. It has not yet been diagnosed in Canada. Edema disease was again a problem in some areas; research on the etiological factors is badly needed.—*J. D. Ray, D.V.M., Chairman, White Hall, Ill.*

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Vesicular Stomatitis in Georgia.—Hundreds of swine have been affected with vesicular stomatitis in a swampy, heavily wooded area along two streams in southwestern Georgia this past year. The disease has probably been present among deer and other animals in the area for fifteen years. It occurs chiefly from May to August.—*T. B. Clower, D.V.M., Atlanta, Ga.*

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Vesicular Exanthema Control.—This epizoötic has been confined to ten states. The most vexing control problem is its occasional appearance in hogs shipped from the eastern part of the hog belt where the source can not be found. Infection must occur at the loading yards where local, garbage-fed swine are brought for slaughter. Garbage-cooking laws or regulations have been passed by 41 states but many are not yet fully enforced. Of the nation's 14,000 feeders of garbage, 31 per cent are cooking the garbage but how effectively is not known. At first, they do not like to do it but eventually most do, since their death losses usually are reduced.

Semimonthly inspection of all garbage-feeding premises is essential to stimulate proper precautions and cooking. Cases developing after one inspection still show lesions at the next. Such inspections are required by about half of the states, which is only 37 per cent of the 14,000 garbage-feeding establishments. Vesicular exanthema is still a threat and could again sweep across the country but, if progress continues at the present

rate, it should be well under control in another year.—*F. J. Mulhern, D.V.M., Washington, D.C.*

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Report on Vesicular Diseases—Committee Report.—There is little difference in the clinical effect of foot-and-mouth disease, vesicular exanthema, and vesicular stomatitis. Vesicular stomatitis was diagnosed in swine in North Carolina in 1953 and in Georgia in 1952 and 1953; also in cattle in Georgia. Until the laboratory at Plum Island, which is still in the blueprint stage, is completed, we will not be properly prepared to combat vesicular diseases.—*M. S. Shahan, D.V.M., Chairman (U.S.D.A.).*

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Parasites in Cattle.—The incidence of internal parasites in the cattle autopsied at the regional laboratory at Tifton, Ga., has markedly increased in the past three years. Many infected cattle on the coastal plains develop "bottle jaw" edema and anemia. Overstocking of pastures and fecal contamination of ponds are the chief contributing factors. It is recommended that pastures be regularly rotated and that phenothiazine be administered in salt, daily, and in therapeutic doses semi-annually.—*J. S. Andrews, Sc.D., and W. L. Sippel, D.V.M., Tifton, Ga.*

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Report on Parasitic Diseases—Committee Report.—The greatest losses from internal parasites are from the unthriftiness of immature animals. Protozoan diseases are more of a problem in sheep and goats than in cattle. In swine, preventive measures are paramount since several species pass much of their life cycle in tissues or organs where they are not accessible to anthelmintics. Fortunately, during other phases of their life cycle, they are vulnerable to sanitary measures. To quote the late Maurice Hall "permanent pastures perpetuate parasites."—*Benjamin Schwartz, Ph.D., Chairman (U.S.D.A.).*

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A Review of Anthrax.—Only a few states have anthrax annually. In 1946, the losses totaled 4,019 animals, mostly from soil infections in cattle. In 1950, only 595 losses in 12 states were reported; in 1951 losses increased to 2,753 in 25 states; in 1952 to 3,451 in 432 counties of 32 states, mostly in swine in previously clean areas. Anthrax outbreaks jumped from a previous annual high of 163 to 483 in 1951 and 1,644 in 1952. In the first eight months of 1953, there were 184 outbreaks in 25 states, with a loss of 566 animals. July and August are the chief anthrax months but, in 1951-1952, it occurred in all seasons, most porcine cases being caused by feeding spore-contaminated, imported bonemeal, while many bovine cases were caused by vaccination with insufficiently attenuated bacterins. Great Britain experienced similar outbreaks in 1952 due to imported bonemeal.—*C. D. Stein, D.V.M. (U.S.D.A.).*

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Bovine Vibriosis.—The optimum time to detect *Vibrio fetus* with vaginal swabs is the seventeenth to twentieth day of the estrous cycle. Since *Vibrio fetus* organisms do not lodge in the deeper tissues, vibriosis can be controlled by the proper use of antibiotics applied locally or added to the semen.—*A. H. Frank, D.V.M. (U.S.D.A.).*

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Control of Bovine Leptospirosis.—*Leptospira pomona* infection in cattle, and occasionally in other species, has been diagnosed in most states and in Canada. Recovered cases, many unidentified, are apparently immune but may be carriers for three months or longer. A vaccine tested on 260 cattle in five herds seemed to be fairly effective when challenged at six weeks. If it will protect the uninfected animals in a herd, and those added to the herd, until the carriers have ceased shedding organisms (urine) it should, with sanitary measures, expedite freeing the herd from infection.—*C. J. York, D.V.M., Indianapolis, Ind.*

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Bovine Infectious Diseases—Committee Report.—Marked gains have been made in combating mastitis associated with brucellosis and infection with *Streptococcus agalactiae*, but other types are becoming more of a problem. Shipping fever is a major problem but more must be known about its etiology before it can be controlled. Leptospirosis also requires more study. Johnes disease apparently can not be eradicated by testing and eliminating. Slaughtering entire infected herds or isolating the newborn heifer calves until a disease-free herd is established is proposed.—*S. H. McNutt, D.V.M., Chairman, Madison, Wis.*

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Eradication of Hog Cholera—Committee Report.—The committee reaffirms its 1951 report urging the U. S. Livestock Sanitary Association and state officials to promote legislation toward eradication. It recommends that pilot test areas be set up as soon as possible to demonstrate the possibility of eradication.—*L. M. Hutchings, D.V.M., Chairman, Lafayette, Ind.*

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Avianized Rabies Vaccine.—The production of this vaccine was modelled on that for yellow fever. As the rabies virus was passaged through baby chicks, it lost its ability to cause signs of disease until, by the 180th passage, it would not kill mice. Since each passage required eight or nine days, this took about five years. The simultaneous use of immune antiserum with this vaccine apparently does not interfere with the development of an active immunity. This vaccine should be effective in man and other animals.—*H. R. Cox, Sc.D., Pearl River, N. Y.*

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Rabies—Committee Report.—Compulsory vaccination is highly successful as a rabies control measure. The chief increase in cases reported in the past ten years has been in the miscellaneous class—skunks, foxes, raccoons, etc. Studies are recommended: to determine whether strains of

rabies virus tend to be species specific; to learn more about the disease in wild animals; and to determine the dosage for bovine vaccination.—*H. A. Milo, V.M.D., Chairman, Harrisburg, Pa.*

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Cooperative Brucellosis Eradication—Committee Report.—In 1952, 5 per cent more cattle were tested than in 1951 but about 3 per cent less than the record year—1935. Infected herds dropped 2 per cent in two years. Calf vaccinations increased 16 per cent in a year. Only 24 states now pay slaughter indemnities. The milk ring test makes it possible to survey almost twice as many cattle as would blood-testing alone.—*C. K. Mingle, D.V.M., Chairman (U.S.D.A.).*

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Bovine Brucellosis Immunization.—Present immunizing agents leave much to be desired. In a series of pregnant heifers, 35 per cent of 31 previously vaccinated with strain 19 vaccine aborted and 45 per cent reacted; of 34 vaccinated with the "M" vaccine, 79 per cent aborted and 82 per cent reacted, while of 25 controls 88 per cent aborted and 88 per cent reacted.—*H. S. Bryan, D.V.M., Urbana, Ill.*

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Rinderpest.—This febrile virus disease of ruminants, and possibly swine, is not present on this hemisphere but once was eradicated from Brazil; also from Australia. Characterized by an inflammation of the mucous membrane of the digestive tract (zebra streaks), it closely resembles virus diarrhea of calves. The virus does not travel through the air. Calves seem to become infected *in utero* since they may show healed lesions when born. If rinderpest is ever suspected the herd should be immediately quarantined and, if tests are positive, it should be eradicated.—*J. A. Baker, D.V.M., Ithaca, N. Y.*

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Bluetongue in Sheep.—This virus disease, present in South African sheep since 1905, was diagnosed in California in 1952, where it affected 196 flocks with a 5 per cent average mortality. It was called "sore muzzle disease" when first encountered in Texas in 1948. It has now been diagnosed in Arizona, Nevada, and Utah also. The disease again was quite prevalent in 1953. It is insect-borne but local studies of the insect species involved have not been completed.

In South Africa, 11 strains of virus have been identified and, because of their immunogenic specificity, multiple antigen vaccines were successfully developed. However, they are banned from this country where only two or three virus strains have been identified. A vaccine using those two strains will be released soon. As with hog cholera, bluetongue can be positively diagnosed only by inoculating susceptible individuals of that species. No therapy seems to have value but, since heat aggravates the condition, affected animals should be kept cool. Insect control should be attempted with lindane and DDT.—*J. E. Stuart, D.V.M., Sacramento, Calif.*

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Animal Disease Reporting in Ohio.—Ohio started a monthly animal disease-reporting program in January, 1953. Each veterinary practitioner or partnership is sent cards, with code numbers for their name and county, and 16 reportable diseases listed for them to check. The reports are then compiled and sent to each veterinarian, county agents, and others. Participation has averaged over 50 per cent and is increasing. —*J. R. Hay, D.V.M., State Veterinarian, Columbus, Ohio.*

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Pullorum Disease Eradication.—In 1909, it was revealed that "bacillary white diarrhea" of chicks (pullorum disease) was transmitted through the egg. In 1913, the agglutination test for infected birds was perfected. The U. S. Livestock Sanitary Association adopted a standard control method in 1932. That year, 1,412,000 birds in 3,900 flocks were tested in 21 states with 75 per cent of the flocks found infected. By 1944, about 24 million birds were tested with 2.3 per cent reactors and in 1952 about 40 million birds with 0.38 per cent reactors. Since a few unexplained "breaks" occur, the testing program should not be abandoned.—*H. Van Roekel, D.V.M., Amherst, Mass.*

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Canary Pox and Vaccination.—A "foot disease" in sparrows was described in 1928; it proved to be pox. In Germany, canaries were affected with a respiratory disease called "schnappkrankeit" which was acute and highly fatal. Now these two conditions are known to be the same disease—"canary pox." A follicle or stick-method vaccine has been in use since 1945. It develops immunity but with an average 6 per cent vaccination loss.—*F. R. Beaudette, D.V.M., New Brunswick, N. J.*

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Diseases of Poultry—Committee Report.—Respiratory diseases are of major importance in the United States and Canada, chiefly Newcastle disease (ND), infectious bronchitis, and chronic respiratory disease (CRD). If applied properly, live vaccines will protect against ND and against infectious bronchitis but these vaccines should be used only where the disease is established. The etiological agent in CRD has not yet been determined.

Bluecomb causes serious losses in some areas, both in chickens and turkeys. It has apparently been reproduced experimentally with unfiltered material. Antibiotics seem to have therapeutic value. Hemorrhagic disease, a new entity, has been reported from all areas except the far West. Losses are high in chickens up to 12 weeks of age. Its cause has not been determined but vitamin K deficiency may be a factor.—*H. Van Roekel, D.V.M., Chairman, Amherst, Mass.*

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Brucellosis—Committee Report.—The ring test

has value but it can not be relied on alone to indicate individual or herd infection. The committee recommends the use of lyophilized strain 19 vaccine and discontinuance of the liquid vaccine. For interstate shipment, it recommends that cattle be: (1) directly from certified brucellosis-free herds; (2) strictly feeder (beef) cattle from nonquarantined herds in modified certified areas; (3) steers, spayed heifers, or calves under 6 months old; (4) consigned for slaughter; (5) officially calfhood-vaccinated and less than 30 months old; (6) same as (5) but over 30 and under 36 months old, if tested within thirty days with not over a 1:100 reaction; and (7) all other cattle negative on test within thirty days.—*R. L. West, D.V.M., Chairman, St. Paul, Minn.*

A California Calf Factory

In southern California, each year the River Ranch collects, by truck, 3,000 Holstein-Friesian heifer calves, when they are 1 or 2 days old, from 50 farms in the area. They must be sired artificially and weigh 75 lb. Each is ear-tagged so that the farmer can buy it back later if he wishes. Each is placed in a 4 ft. by 6 ft. sheltered, freshly cleaned pen whose concrete floors have been bedded with sawdust. Three feedings daily were tried but twice daily feedings at twelve-hour intervals seemed as satisfactory.

One pound of whole milk powder added to 10 lb. of water (100 F.) is fed in half-gallon bottles with a rubber nipple and placed so the calf has her head up while drinking. After two weeks, each calf is put with 4 others in a larger pen and given access to unlimited water, alfalfa hay, and a calf starter. The bottle feeding, twice daily, continues but the whole milk is gradually replaced by a skimmilk mixture. At 8 weeks, when the calf should weigh 185 to 200 lb., it is weaned and either sold or turned into a larger lot.

Dr. J. A. Howarth of the University of California is credited with devising the plan for controlling scours and calf diseases. Each calf receives 0.5 Gm. of chloromycetin® *per os* every day for the first four days. This system has kept losses to 7 per cent compared to 40 per cent in an untreated group. No mature cattle are kept on this ranch.—*Farm J., Sept., 1953.*

Feeding penicillin to turkeys decreased egg production, egg weight, and hatchability.—*Poult. Sci., July, 1953.*

Idaho Present at Toronto Meeting

The report on registration at the Toronto convention (October JOURNAL, pp. 271-272) was in error in stating that "Every state in the Union except Idaho was represented." Dr. A. P. Schneider, director of the Idaho State BAI, calls attention to the fact that he represented the Idaho V.M.A. in the House of Representatives and that three other persons from Idaho were in attendance. A recheck of the registration lists confirms this.

The World's First Transparent Dog

The world's first transparent dog has come to America, where the Gaines Dog Research Center will use it as an eduational exhibit. It is modeled after a female Great Dane and is a work of plastic and plexiglas. Every detail of the body has been

Vesta, the first transparent dog.

carefully duplicated—the skeleton, teeth, muscular system, and internal organs. Each organ glows with its own individual color illumination while a "voice" explains the various organs and their functions.

Like the first transparent woman, a feature of the New York World's Fair in 1939, the transparent dog was created by the Deutschen Gesundheits-Museums, Cologne, Germany, and flown to Cleveland, Ohio, where the Brush Electronics Company worked out the sound system which coördinates the figure's "lecture" with the lighting of the organs.

"Vesta," unveiled at the third Gaines Veterinary Symposium in Kankakee, Ill., on October 21, will be shown at selected events in various parts of the country. She is truly a "sight" worth "hearing." Beside her stands the champion, Fury.

Evaluation of Plans for Combination Animal Hospitals

The American Veterinary Medical Association has considered it desirable to encourage the development and improvement of the veterinary hospital as one means of establishing the veterinary profession on a firm community and economic foundation.

To this end, a series of articles on the planning and construction of combination veterinary hospitals which have been built in various parts of the country in recent years has appeared in the JOURNAL, beginning with the December, 1951, issue. Since it is planned to gather the articles into a reprint, it was believed desirable to ask the owners of the hospitals who prepared the articles if they would make any changes in their plans or facilities were they rebuilding.

Accordingly, at the request of the Committee on Standards for Veterinary Hospitals, a frank appraisal of the desirable and undesirable features of their hospitals has been made by the respective authors. Those received to date are published herewith and will also be incorporated in the reprint of the articles.—*Lloyd C. Moss, Chairman, Committee on Standards for Veterinary Hospitals, Fort Collins, Colo.*

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Billings Veterinary Service
Billings, Montana

Following are the changes we would like to make in our hospital (*see* JOURNAL (Dec., 1951): 419) and the pitfalls that we think might be prevented when others are planning a similar pattern of practice.

1) If a combination hospital has sufficient small animal work to keep one veterinarian busy, it would be better to provide clients with separate waiting rooms and entrances, so that two different types of clientele would not be together in a common reception room. With this in mind we would change, and may eventually do so, the small animal addition of our hospital to the plan shown in figure 1, as compared to the diagram in the JOURNAL (Dec., 1951: 424).

2) The original plans of the main building (*ibid.*, p. 427) shows the lavatory opening into the reception room. This was an unfortunate mistake and has been changed so that the door opens into the laboratory instead of the reception room.

3) An overhead suspended gas heater in the kennels is not satisfactory for kennel heat. The kennels, as do all kennels, open only at the front, and it is difficult to get the heat into them, and the floors remain cold. Radiant heat is the only answer to satisfactory heat in the type of kennel we have.

4) We made the mistake of having the floors of the cages flush with the floors of the alley-way in the kennel. These should be elevated 3 to 6 inches above the main floor.

The large animal barn shows two inadequacies of design:

a) The amount of light through the small windows is not sufficient. It would have been much better to have had these windows encased in a proportionate expanse of glass brick.

b) The dimensions of the surgery room are not satisfactory. It should be at least a third larger in width and length, so that a stock or stanchion could be put in (not necessarily a chute, however).

The corral is adequate for our needs, but another corral would be desirable. We provide two unloading chutes of permanent structure—one for a pick-up truck, the other the correct height for a regular-sized truck.

The location of the loading chutes should be where trucks have to do a minimum of backing-up.

In the use of concrete or cinder blocks in barns and kennels, it is necessary that they be sanded smooth and then covered with a paint such as mastertex or some such substance, so that debris does not collect in the pits of the blocks. Our concrete blocks are covered with mastertex and then varnished to make a smooth, easily cleaned surface.

The features we find especially desirable are:

a) The two entrances into the hospital is in line with keeping the clientele separate.

b) The use of glass brick which provides

more light and airiness in the various rooms.

e) A private office is a necessity, regardless of size of the office, as hospital clients should not be forced into the position of relating their problems before others.

d) The use of out-fans and skylights in rooms where odors may collect has proved a good investment.

e) The use of concrete block partitions in the dog runs have kept down noise and sanitary problems considerably. The partitions are 3½ feet high before fencing is used in the runs.

f) In the barn, the stall just off the surgery room makes it unnecessary to go through the alley-way of the barn, and the heat of the surgery room, available to the stall through the use of double doors, is handy and needed.

g) To be able to put an animal directly from the unloading chute into a restraining chute is a time saver.

h) The use of an outside chute with a cement apron and drain makes sanitation of the hospital and cleanliness a lot easier and safer.

To me, the question of dispensing narrows down to the method used. There is no question in my mind that the public interest, as well as our own, demands that we dispense; otherwise, we are shirking our responsibility to the public and driving them into unethical channels where dispensing has become merchandising and, obviously, therein lies the danger to the profession also.

However, the need of the economy of dispensing as an aid to the expansion and

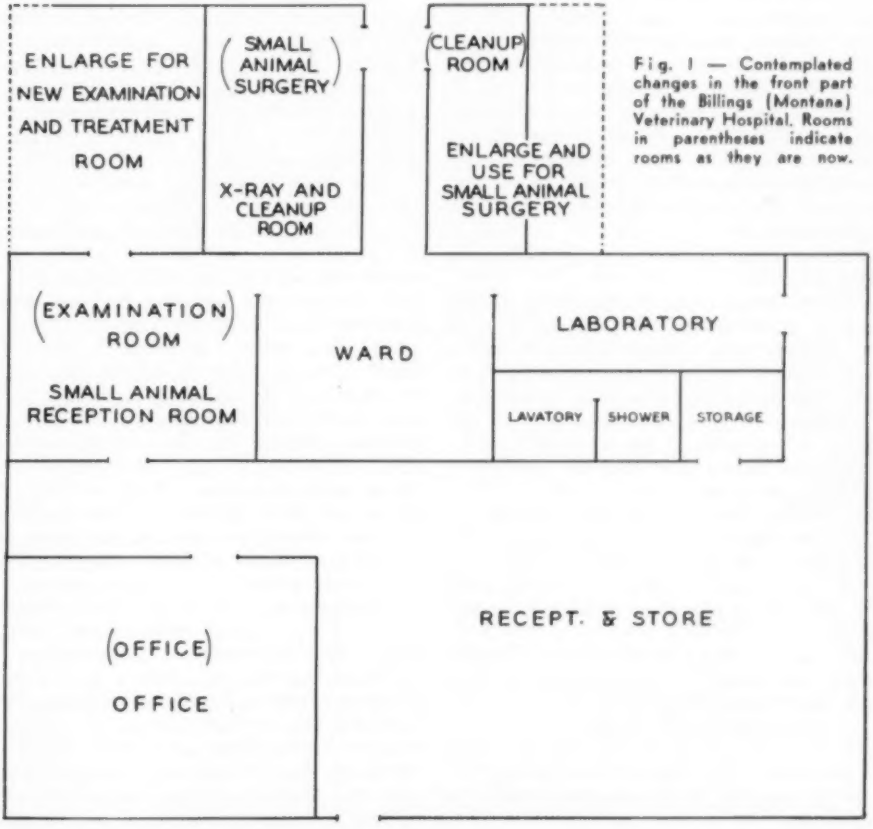

Fig. 1 — Contemplated changes in the front part of the Billings (Montana) Veterinary Hospital. Rooms in parentheses indicate rooms as they are now.

maintenance of an adequate clinical establishment is necessary. Therefore, it should be determined, not only what constitutes ethical professional dispensing, but also what physical requirements are needed to put this dispensing on a high plane.

If we were to rebuild I would favor a separate room, perhaps, with a double door, or an insert off a main room similar to what professional pharmacies maintain to fill their prescriptions. It is true that in certain parts of the country this is not a problem, but here in the Rocky Mountain West, it borders on being essential, if we are to advance the course of clinical establishments in veterinary medicine.—*A. F. Hayes, D.V.M., and G. M. Wright, D.V.M., Billings, Mont.*

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Madsen and Wilson Veterinary Hospital
Sheridan, Wyoming

On the whole, we are well satisfied with our hospital plan (*see* JOURNAL (Feb., 1952): 57) as it is. However, there are, of course, changes we would make if we were rebuilding. They are as follows:

1) The low-sloping roof does not permit sufficient ventilation. In the winter months when the hospital is full of animals, condensation on the walls and ceiling is heavy. We would prefer a gabled roof for the large animal stables.

2) Our large animal surgery room is a little too small.

3) The cattle chute in the large animal surgery room should be arranged so that the animals come directly out of it into a stall, without having to make a sharp turn.

4) Our feed storage space is inadequate.

5) We don't like aluminum gates in the corrals where animals are crowded.

Some of the features that we have found to be of special value are:

1) Three acres of irrigated pasture.

2) Our unloading ramp and dock.

3) Our hot water heating system.

4) Individual floor drains connected with the city sewer system for all rooms and stalls.

We believe that the following items are vitally important when planning a large and small animal hospital:

1) Plenty of parking space.

2) Location should be readily accessible to both small and large animal clients.

3) If possible, the landscaping should be attractive.

4) Large animal and small animal sections (particularly examination rooms) should be arranged to require minimum walking for the personnel.

5) Cement floors in the large animal section should be rough and drainage good.

We prefer to have our drugs and equipment displayed in a room separate and apart from the reception room; however we do want it located so that clients will see our display.

Our loading dock works satisfactorily, with the exception that we should have some mechanical means of lowering and raising it more easily than it is now being done; possibly a hydraulic jack would be the answer.—*Peter E. Madsen, D.V.M., Sheridan, Wyo.*

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Princeton Veterinary Clinic
Princeton, Illinois

After nearly two years of actively operating from the Princeton Veterinary Clinic (*see* JOURNAL (April, 1952): 180), Dr. Albrecht and I are firmly convinced that a combination hospital in our area has been a sound investment. In a partnership it is necessary to provide a base of operation; a readily accessible location certainly increases drug dispensing; surgery on large animals has been facilitated; and in our area there had not been a small animal clinic before we established ours.

Perhaps we are too self-satisfied, but we have no material changes that we would make in the building from the original plans. The number of large animals that have come through the clinic has rather surprised us. At one time, we felt that we should have provided more space within the building for the storage of feed and bedding. However, we have now decided that these dust-producing articles would best be stored in an entirely separate building. We are adding a small quonset-type unit to the rear of the clinic for the storage of grain, hay, straw, and bulky drug items.

We applied a patented nonslip flooring to the large animal room called "mortar base," manufactured by John Dolbow of Philadelphia. The floor has a very smooth finish to provide for easier cleaning. The product was represented to us as being slip-proof even if smooth-finished. However, we have found it slippery when wet and this has been a problem—especially when taking animals off the large animal table.

The floor should have had a rough finish as in cement. In all fairness, it does not seem to be as slippery as a smooth-finished cement would be.

We have a space in our reception room where a display case of drugs for dispensing could be located; however we have not as yet done so. I firmly believe that the veterinarian can ethically dispense to his clientele and thereby render a greater service than can the drug and feed store.

We intend to construct an unloading chute and catch pen arrangement in the rear of the clinic building. There are certain types of cases which could be nicely treated in the open in mild weather. Not having an unloading chute has not proved to be a serious disadvantage. The larger trucks in this area all seem to have unloading ramps attached; many clients use horse trailers to bring patients in and they are constructed so that the animal may easily step in or out; some animals come in on pick-up trucks and we unload the animal from them by merely jumping the animal onto a bale of hay or straw. I think an unloading chute will have to have some adjustment feature to fit various heights of trucks.—*H. L. Marsh, D.V.M., Princeton, Ill.*

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Taylor Veterinary Hospital
Taylor, Texas

The major criticisms that came to my mind, when evaluating our hospital (*see* JOURNAL (June, 1952): 359), are as follows:

1) There is no central hallway. While hallways have been criticized as wasted space, their advantage is enormous. Many of our clients insist on entering via the back door, through the kennel room and examination room to the reception room. If they see anything at all interesting along the way, they may never get as far as the reception room. Besides creating confusion in the rear and in the center of the hospital, such action neutralizes the functions of the receptionist.

2) No natural route from large animal parking area to reception room had been provided. Some thought should be given to planning a covered walk or some natural approach from the parking area to the reception room, with plenty of directional signs, as it is always difficult to entice large animal clients into the business office either before or after their cases have been treated.

3) We had no counter separating business records area of reception room from waiting area. Everyone knows the advisability of maintaining privacy in record keeping. A counter helps in that regard as well as in keeping assorted pets off the receptionist's desk.

4) We had omitted providing for unloading large animals directly into stalls. An adjustable loading chute should be provided from which animals could be moved directly into stalls and/or treatment room. A chute system should also provide for their transfer to exercise pens and back to stalls.—*H. T. Barron, D.V.M., and H. Jones, D.V.M., Taylor, Texas.*

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Herzberger Veterinary Hospital,
Colorado Springs, Colorado

I believe that most veterinarians in building a new hospital are anxious to make every square foot of space paying space. I did this fairly successfully I believe, but I cut several corners too short as it is impossible to visualize future needs. My hospital (*see* JOURNAL (Dec., 1952):431) is built so that it will not be too difficult to add more kennel space, exercise runs, and another examination room if necessary. However, my office is much too small. It should be larger and if building again, I would not only make the present office larger, but I would add a private office—one that would afford privacy for relaxation once in awhile, and also so that necessary paper work could be done without too many interruptions. It is impossible to do any reading in a joint office with the receptionist.

Also, if rebuilding I would have every wall in my kennel rooms built of soundproof material. At times, the barking of dogs is almost more than I can endure.

Outside of these changes, I am well satisfied with our arrangement. I like the dispensing window from the drug room into the reception room, and I like the surgery away from the reception room.

Possibly a display of drugs and equipment for sale to clients in a strictly large animal practice would be satisfactory in the reception room. However, in a mixed practice I believe that such a display is detrimental to the appearance of the reception room and gives a commercial rather

than a professional atmosphere. I had a display in the reception room for several months and took it out.

I do not like any of the adjustable loading and unloading chutes that I have seen. I would much prefer two separate chutes adjoining each other, with one the height for trucks and the other a suitable height for pick-ups. I believe that this arrangement is more satisfactory and surely as economical.

I also like the small and large animal areas separated. It causes a few more steps, but has many other advantages that are obvious.—*A. C. Herzberger, D.V.M., Colorado Springs, Colo.*

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Large and Small Animal Clinic
Saratoga, Wyoming

Of all the features I have in my clinic (*see* JOURNAL (March, 1952): 121), I highly recommend the corral arrangement and shed space. I have plenty of room to handle any type of cattle in the easiest manner, with provisions to isolate them if the need should arise. I think this arrangement is highly necessary when you handle many large animals.

My unloading chute is not adjustable but I find it most satisfactory to unload cattle from trucks of any size. The height from the ground is 38 inches and seems to work satisfactorily.

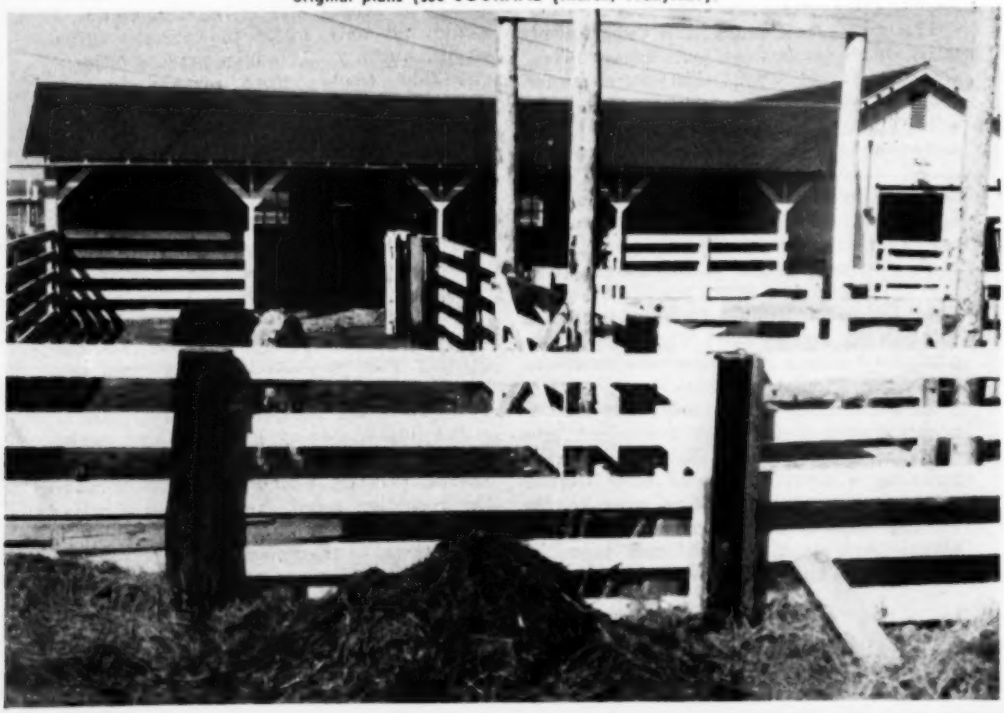
One important thing in building a loading chute is to have a long one with a gradual incline which facilitates easier unloading and especially loading. My loading chute is 15 feet long and on a gentle incline.

I think dispensing is an important, necessary, and lucrative part of a veterinarian's practice—especially in a mixed or large animal practice.

While my dispensary is located in my reception room and is the first thing a client sees on entering my clinic, I think some intermediate arrangement may look a little more professional and neater. However, if the drugs are where the client can see them, I think you will dispense more than if they are hidden.

From the diagram of my corral arrangement and chute, *ibid.*, you will note that my outside chute is mounted on cement which I think is necessary—mainly because blood and objectionable discharges from in front of the chute that smell and attract flies can be hosed down.

Fig. 1—The new building and corrals added to the Pierson establishment since publication of the original plans (see JOURNAL (March, 1952):121).



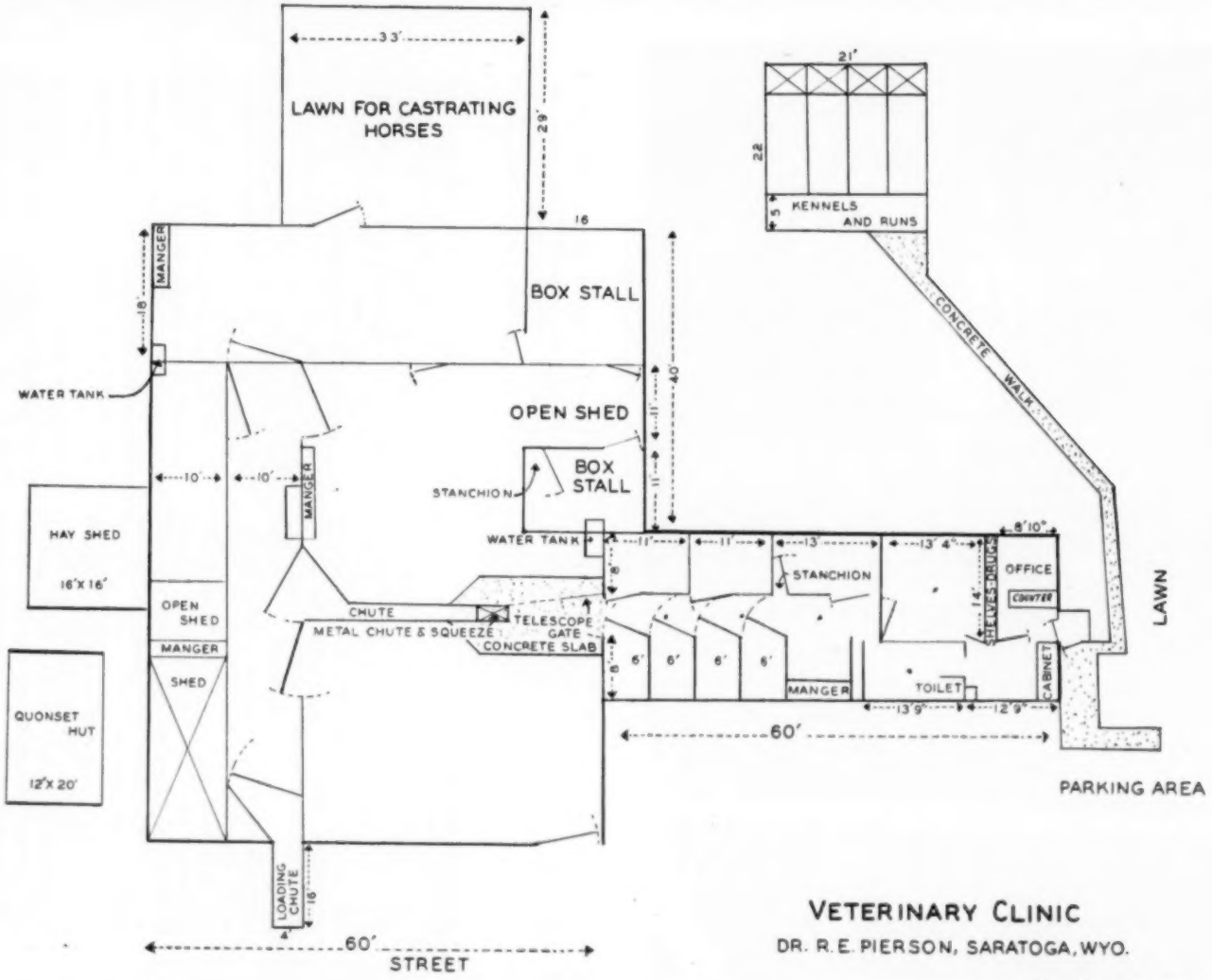


Fig. 2—Revised plans of the Veterinary Clinic in Saratoga, Wyo. For comparison, see the JOURNAL (March, 1952): 121.

VETERINARY CLINIC

DR. R. E. PIERSON, SARATOGA, WYO.

SCALE 1 INCH = 10 FEET

Fig. 3—The alley and the squeeze chute in the Pierson corral arrangement.

Another feature we have just added is a small, enclosed grass lawn to be used mainly for casting horses for castration, etc., on a clean soft ground. Corrals are always so hard and dirty for such operations.—*Robert E. Pierson, D.V.M., Saratoga, Wyo.*

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Dalhart Animal Hospital
Dalhart, Texas

If I were to build another hospital (*see* JOURNAL (April, 1953): 260), the first step would be to bond my contractor. I believe this should be emphasized in preparatory building. I did not experience any undesirable problems but I could see how they might arise. My arrangement is satisfactory and the few changes I would make would take place in any type of structure. I believe that one should be particularly interested in his floor grades, kennel grades, etc. These are essential in so far as we have to drain a great amount of water in cleaning up.

The special features of my hospital are found in the large animal clinic. The handy squeeze chute which is inside and out of the weather has made me praise it every time I use it. Then, also, our stalls which are under the same roof with the large animal clinic room have proved practical.

The reception room display of drugs and equipment to clients will depend upon the locality of the practitioner. In my particular case, being in a semirural area, I favor the selling of equipment and drugs because my farmer and rancher clients request it. If I did not furnish these men with this merchandise, it would increase their trust and faith in the local drug store traffic. I display my supplies in an attractive glass showcase, which has a professional look in the reception room.

I prefer the stationary type of loading chute and ramp which is built at a height to accommodate trucks and pick-ups comfortably. We have used heavy material and also concrete walks and runs wherever possible.

I believe that a combination hospital, whether large or small, is one of the answers to the question of service to clients and their respect of the veterinarian in rural and semirural areas.—*Charles A. Thompson, D.V.M., Dalhart, Texas.*

Use of Progesterone to Control Habitual Abortion in Cattle

E. A. WOELFFER, D.V.M.

Oconomowoc, Wisconsin

VETERINARIANS occasionally are called to treat valuable cows which have aborted during advanced pregnancy on several consecutive gestations. As a rule, the owner of such an animal is most anxious to obtain a live calf and requests veterinary assistance to prevent abortion on the subsequent pregnancy.

Threatened abortion in the human being is commonly treated by injections of progesterone.[1,2] McDonald[3] has reported that removal of the corpus luteum in cows from the ninety-second to the 163rd day of pregnancy results in abortion. Pregnancy can be maintained by progesterone injections in cows which have undergone surgical removal of the corpus luteum during this period of pregnancy.

Progesterone preparations available to the veterinarian have been oil solutions or aqueous suspensions. Upon injection, either subcutaneously or intramuscularly, the hormone is rapidly absorbed, with a resulting systemic effect of short duration.

This type of preparation, for practical or economical reasons, has not been used in treating bovine abortion cases. Recently, a new type of parenteral solution, repositol®* progesterone, designed to promote sustained hormonal effect, was made available. Following intramuscular injection of this solution, the progesterone is precipitated by contact with the tissue fluids to form an implant. McDonald[3] reported that 100 mg. of crystalline progesterone in sesame oil injected daily was necessary to maintain pregnancy in a high percentage of cows with surgically removed corpus luteum, and that it appeared that 500 mg. of repositol progesterone every nine or ten days would also accomplish this purpose. Thus, by using this type of implant therapy, only half as much hormone is needed as a total dose, and the injections can be conveniently administered at nine- to ten-day intervals.

Dr. Woelffer is a practitioner in Oconomowoc, Wis., specializing in reproductive diseases of cattle.

*Trademark, Pitman-Moore Company, Indianapolis, Ind.

CLINICAL RESULTS

On the basis of the above information, this hormone preparation was used on 8 cows with a history of previous abortion. All treated animals received 500 mg. of the hormone as a dose, regardless of age or breed, at seven- to ten-day intervals. The injections were made in the muscles of the neck and gluteal regions. Full-term pregnancy resulted in 7 of the cows. The following case histories of 4 of the animals treated illustrate the merits of this regimen.

Case 1.—All blood tests on a purebred 6-year-old Holstein-Friesian from a brucellosis-free herd were negative. The first offspring was a normal heifer calf, dropped when the dam was 26 months old. The cow then conceived on the first service after a three-month rest period but aborted approximately six months later. After five months, the cow again conceived on the fourth service but aborted ninety-eight days after conception. *Vibrio fetus* organisms were isolated from the latter fetus by the Wisconsin laboratory.

Conception again took place in approximately three months and a third abortion occurred following a gestation period of nearly eight months. This time the laboratory findings on the fetus and fluids were negative. The cow became pregnant for the fifth time ninety-six days after the abnormal calving.

Intramuscular injections of progesterone in oil, 100 mg. at 48-hour intervals, were started when the cow was six and one-half months pregnant. After four weeks, repositol progesterone was substituted at the rate of 500 mg. administered at intervals of seven days until three weeks before the

calf was due. The cow calved normally at term.

Case 2.—An 8-year-old purebred Guernsey cow that had been purchased at a dispersal sale was first seen three years after she arrived at the new owner's farm. She had been purchased as not pregnant and during this three-year period had not produced a calf. The owner was most anxious to obtain an offspring. Little was known of her past breeding history except that she had one living heifer calf, dropped at seven months, which survived and grew into a valuable animal. The cow was at all times negative for brucellosis.

As might be expected, this cow's reproductive organs and also her over-all appearance presented a general staleness. However, no evidence of gross pathology was found. Following treatment over a three-month period, the cow conceived. She improved in general appearance and seemed to take a new interest in life. However, when she was six and one-half months pregnant, she aborted. No pathological condition or infection were found in the aborted fetus and membranes.

The cow readily conceived at the second service following a rest period of eighty days. Repositol progesterone injections were begun at intervals of nine days when she was five months and three weeks pregnant, or approximately three weeks before abortion might have been anticipated. The injections were discontinued approximately three weeks before the expected parturition date. The cow calved normally at term.

Case 3.—This purebred Holstein-Friesian cow had her first calf normally at 27 months of age. She was in good health and was a member of a brucellosis-free herd. Her blood tests were regularly negative. She conceived 104 days after calving and aborted approximately six and one-half months later. Laboratory examinations of the fetus and membranes were negative. The uterus was treated and the cow was bred and conceived sixty-two days later. Abortion this time occurred approximately seven and one-half months later. The cow again conceived after a three-month rest period.

When the cow was six months pregnant, she was given 500 mg. of repositol progesterone at intervals of ten days. The progesterone treatments were discontinued three weeks before parturition. The cow calved normally at term.

Case 4.—A purebred Guernsey calved normally at 39 months of age. Her second gestation also terminated normally a few days less than a year following the first calving. Her third gestation terminated in a seven-month abortion. However, a year and eight days later, she again calved normally. Her fifth pregnancy ended, in seven and one-half months, in her second abortion. Two years later, when the cow was 8 years old, a mummified fetus was removed. After seven months during which breeding troubles and a serious kidney infection were encountered, the cow conceived for the seventh time but at seven and one-half months aborted for the third time. In a little over three months the cow was again with calf.

Six months later, repositol progesterone treatment was started. The dosage was 500 mg. given at intervals of ten days. The last two doses were given three weeks apart and treatment was discontinued twenty-four days before the delivery date. The cow calved normally.

At 11 years of age, this cow is well along in her ninth gestation, less than four weeks from calving. Repositol progesterone is being administered in the same manner as during her previous pregnancy. The owner expressed the opinion that the cow never seemed to feel so good or to milk so well as she did following her last calving. The cow looks well and there is every indication that she will calve normally again.

COMMENT

Three other cows that carried their fetuses to term following repositol progesterone injections had records similar to those described. The reproductive histories of these cows were similar in that calvings were normal except for single abortions preceding the gestation period in which the progesterone treatments were given. The abortions in each case occurred in advanced pregnancy, from six and one-half to seven and one-half months. The fetuses in each case revealed no infections upon laboratory examinations.

A fourth cow was treated with repositol progesterone following a six-month abortion. She aborted again after only three injections of progesterone had been given. In this case, the fetal fluid contained Vibrio organisms.

A fifth cow, with a history of two late

abortions, was given repositol progesterone as described above. She had been pronounced pregnant at approximately forty days and again at one hundred days following service. Progesterone treatments were started five and one-half months after breeding, a few days after the cow had been removed from pasture and confined to a paddock. Six weeks later, she was examined and found not pregnant. Presumably, the cow had an unobserved abortion while on pasture and before progesterone treatments were begun.

It is realized that more cases of this type must be treated before this hormone therapy can be evaluated. However, these few cases indicate that veterinarians can suggest this procedure to cattle owners who are requesting treatment of cows that abort chronically.

SUMMARY

A new progesterone preparation, repositol®, was used in 500-mg. doses in 8 cows that had previously aborted, from one to three times, in an effort to maintain pregnancy. Seven of the 8 animals had delivered at term. Four cases are reported in detail.

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[1]Katz, Jacob, Parker, Elizabeth, and Kaufman, Morton S.: Treatment of Recurrent and Threatened Abortion. J. Clin. Endocrin., (1941): 838-849.

[2]Hamblen, E. C.: Endocrinology of Women. Charles E. Thomas, Springfield, Ill. (1945): 475-476.

[3]McDonald, L. E., Michols, R. E., and McNutt, S. H.: Studies on Corpus Luteum Ablation and Progesterone Replacement Therapy during Pregnancy in the Cow. Am. J. Vet. Res., *13*, (1952): 446-451.

Cardiac Resuscitation

Cardiac arrest or ventricular fibrillation may occur even in minor surgery and with local anesthesia. Anything that interferes with, or depresses, respiration may bring on asystole and anoxia. When it occurs the circulation and respiration must be maintained artificially if the patient is to survive with an intact cerebrum.

The first step is artificial respiration, preferably with an endotracheal tube apparatus. The heart may be pricked with a needle but if this does not stimulate normal rhythm, manual massage is indicated. Intravenous fluid should be given simultaneously to support the circulation. If the heart rhythm is restored but contractions are weak, 0.5 to 1.0 cc. of epinephrine should be injected into the auricle and repeated every three minutes. If this is not effective, 2 to 4 cc. of a 10 per cent solution of calcium chloride should be slowly and cautiously injected into the auricle. Atropine, 0.01 gr., may be given intravenously but digitalis and strophanthin should be avoided. These agents must be prepared and at hand before the operation starts.—*J. Am. M. A., Aug. 8, 1953.*

A Case of Ovarian Pregnancy

A British woman was hospitalized with her second recent attack of nausea and abdominal pain. The pain was not aggravated by movement and there was no rigidity, but there was tenderness on deep palpation of the left iliac fossa. Laparotomy revealed a normal right tube and ovary but a 2.5-cm. tumor at the site of the left ovary, which appeared to consist of the ovary plus an adherent mass of clotted blood; there was no free hemorrhage in the peritoneal cavity.

After this tumor was excised recovery was uneventful. The hemorrhagic mass contained a very early fetus. Whether fertilization takes place at the inlet to the fallopian tube and the fertilized ovum gravitates again into the ruptured follicle or whether fertilization takes place without the ovum leaving the follicle is not known. The literature records 38 cases in women in which ovarian pregnancy proceeded beyond the seventh month and, in 12 of these, a living infant was produced.—*Brit. M. J., Feb. 28, 1953.*

Hernial Repair with Tantalum Mesh.—A survey of 29 persons, in which tantalum mesh had been used in the repair of large recurrent hernias, revealed that there had been two recurrences, both in patients with inguinal hernias. No wound sinuses had developed.—*J.Am.M.A., May 2, 1953.*

Effect of Season on Dairy Bulls.—The physiological reactions and fertility of 14 dairy bulls was studied for a year under subtropical environment in Louisiana. No significant breed differences were found in Holstein-Friesians, Guernseys, and Jerseys. Only the respiration rate was consistently related to climatic conditions. Fertility was the highest in the winter, spring, and early summer, and lowest from July to September.—*J. Dai. Sci., Sept., 1953.*

An Operation to Preserve the Continuity of the Hip Joint

A. T. KNOWLES, D.V.S.; JACK O. KNOWLES, V.M.D.;
ROBERT P. KNOWLES, D.V.M.

Miami, Florida

Femoral Luxations

That luxation of the hip is an important and perplexing problem to veterinarians is shown by the great variety of techniques which have been used to attempt its correction.[1,2] The fact that there are so many ways of repair in use shows that no one method is outstandingly successful. The object of the various pin assemblies and casts has been to immobilize the entire limb. Complete immobilization of the hip for any protracted period is quite a feat when one considers the physiology that must continue, the leverage exerted by the hip, and humanitarianism.

Femoral Head or Neck Fractures

Among the most difficult fractures to reduce successfully are proximal epiphyseal fractures of the femoral head. However, the difficulty encountered in repairing all head and neck fractures of the femur again lies in the fact that complete immobilization of the fragments usually entails an attempt at complete immobilization of the joint as well. Too often this results in reduced function of the entire limb, either because immobilization has been complete and permitted ankylosis of the joint, or it has failed, resulting in a nonunion.

The repair of fractures with internally applied rigid materials, such as hip nails, commonly used in human surgery, has been reported on an experimental basis.[3] These nails would permit normal joint action and at the same time firmly support the bone fragments. However, experience with this type of fixation has shown that the placement is quite difficult and that in time the nails work loose, necessitating their removal via a second operation. In addition, resorption of the femoral neck is too often the unavoidable sequel.

It would seem, then, that the solution would be a method of hip repair which neither requires immobilization of the joint nor depends on a chance union of sections of torn fibrous tissue for its strength. In other words, really successful repair of severe hip luxations is dependent upon replacing the torn round ligament.

The fragments of bone involved in femoral head and neck fractures must be united by a method which will tolerate considerable stress, yet permit reasonable physiological action of the hip joint and be completed in one operation.

Resorption of the femoral head in most types of repair is attributed primarily to an interference with adequate local nutrition. The local nutrition can be easily impaired by the mass of foreign material present, the trauma of the original injury, and the trauma resulting from repair.

Our technique achieves the alignment and reduction of the fragments with a minimum of trauma and no foreign material at the fracture site.

So far, there has been a singular absence of femoral neck resorption but it is realized that no definite conclusions can be drawn on this point short of a year's time.

General Considerations

The hip is secured by fibrous tissue, a type of tissue that tears rather than stretches under tension. In any hip luxation there must have been some tearing of the round ligament and/or joint capsule. The variation is a matter of location and degree, and the extent to which the tissues are torn determines whether the hip will retain the normal position following its reduction.

A recent survey[4] discloses that about 18 per cent of all reductions of hip dislocations, using current methods of repair, result in failure. Although no exact figure is available regarding the proportion of luxations in which methods other than simple reduction are required, it has been our experience that approximately 50 per cent require additional restraint.

Whether a luxation will recur can be predicted by reducing the luxation with

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The television demonstration of this operation, by Drs. Jack Knowles and C. E. Bild, Miami, Fla., at the annual AVMA meeting in Toronto (July 20-23, 1953), with illustrations, is published in the 1953 "Proceedings Book" (Small Animal Section).

The Drs. Knowles are small animal practitioners in Miami, Fla.

The assistance of Dr. George F. Yopp, Jr., in the development of this operation is gratefully acknowledged.

the patient lying on its normal side under general anesthesia, then applying lateral pressure to the uppermost femur. If it is possible to lift the hips of the patient without noticeable lateral mobility of the femoral head, the hip can be expected to remain in apposition without assistance.

DIAGNOSIS

Luxations are easily diagnosed by the history or by the various symptoms, such as: the patient carries one hind leg; the affected leg is an abnormal length (usually shorter); there is deformity where the femoral head rests on the shaft of the ilium; manipulation of the hip joint causes pain; the femoral head will usually show crepitation and excessive mobility. We depend on a radiograph for a final diagnosis. It not only is definite but also will show any complications that may be present, and their extent.

ANATOMY

The object of our operation is to secure the femur to the pelvis by means of a strip of fascia lata which is anchored within the pelvis by the toggle bolt principle. We drill a hole in a meso-dorsal direction, starting on the lateral surface of the femur just ventral to the trochanter major, penetrating the femoral shaft, neck, head, and the dorsal wall of the acetabulum. In exposing the operative site on the femur, the incision penetrates the skin, fascia lata, muscle sheath, and muscle fibers to expose the shaft and the trochanter major.

Two nerves, the obturator and the sciatic, must be identified and avoided since both are in the operative area. Their exact routes and relationship must be understood.

The obturator nerve passes downward and backward within the *lower* lateral wall of the pelvis through the anterior part of the obturator foramen to the obturator externus muscle. To avoid this nerve, the hole is drilled in a meso-dorsal direction so that it will enter the pelvic cavity high on the lateral wall.

The great sciatic nerve, the largest nerve in the body, emerges from the greater sciatic foramen of the ischium and turns downward in the hollow between the trochanter major and the tuber ischii. In its descent of the thigh, it is bounded by the biceps femoris, laterally; the adductor, semimembranosus, and the semitendinosus medially; and is in close proximity to the *posterior* aspect of the femur. To avoid this nerve, palpation of the acetabulum and nearly all of the dissection is done on the *anterior* aspect of the femur.

MATERIALS

Fascia lata can be obtained from the patient, from another dog or, in the past, could be bought as human fascia lata from Johnson and Johnson, New Brunswick, N. J.

Bild[5] described the following method of quick freezing fascia lata: A suitable dog donor is placed under a general anesthetic; using sterile technique, reflect the skin from the anterior aspect of the thigh so as to expose the entire tensor fascia lata; divide the fascia lata longitudinally into ½-inch strips and carefully dissect them from the underlying muscle; as each strip is removed, place it in a test tube containing 10 cc. of sterile physiological saline, 200,000 units of penicillin, and 0.25 Gm. of streptomycin. After thirty minutes, decant the liquid, seal the tube, and place it in the freezer.

In this manner, a fascia bank which should last for many months can be secured in two hours.

Because it is less trouble, we have generally used the prepared human fascia lata. This is not the "homogenious transplant" referred to in the literature, but it is handy, sterile and, in our experience of nearly a year with this operation, it has given satisfactory results. However, at present, human fascia lata is not being manufactured.

Austin and Damstra[6] state that "Of all the methods proposed, fascia lata sutures and grafts appealed to us as the best. There are a number of reasons for our choice. Fascia is a homogeneous tissue which can be removed from the thigh without ill effects. When transplanted it causes no unfavorable tissue reaction. It is living tissue which promptly becomes an enduring part of the repair. Fascia is a normal supporting tissue of the body. Furthermore it is charged, in the form of scar tissue, with the function of anatomic repair. Unlike the skin it is normally buried and does not have to be absorbed, infiltrated and transformed in order to survive and carry on its function. Unlike tantalum it does not remain in the tissues as a foreign body which must be overgrown to protect the surrounding tissues. In a word, either as sutures or as grafts, fascia seems to us the ideal material for the repair of intractable hernias."

They were discussing hernias, but their remarks are equally appropriate for this operation. Their point is that connective tissue, having no blood vessels, is nourished by the surrounding interstitial tissue fluid and, therefore, can be expected to "promptly become an enduring part of the repair."

We have used plastic suture material in the form of polyethylene with success. Having a greater tensile strength than fascia lata, it has been used where immediate strength was a primary concern. However, generally speaking, fascia lata is more suitable than plastic because: (1) It

is a living tissue and should have more enduring strength; (2) it is physiological, so becomes a part of the repair rather than a foreign body; and (3) being alive, it will adjust somewhat, in time, to the mechanics of the joint.

EQUIPMENT

The equipment necessary for this operation is that for an ordinary open reduction, plus:

Standard equipment

1) hand drill
2) 9/64-in. drill bit or 5/32-in. drill bit

Special equipment

1) toggle pin
2) cannula
3) blunt trochar

(fig. 1)

4) drill jig (fig. 2)

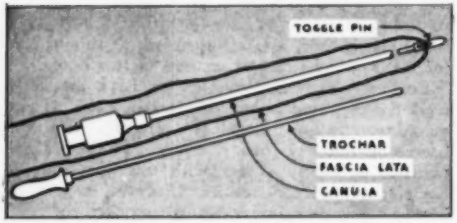

Fig. 1—Part of the special equipment needed for the Knowles' operation for luxation of the hip.

TECHNIQUE

Reduction of Luxation.—The technique described by Dibbell[8] is the easiest and most dependable method of returning the femoral head to the acetabulum. The patient is given a general anesthetic and is laid on its side with the luxated hip uppermost.

The operator grasps the trochanter major with one hand (so as to be in position to guide the femoral head into the acetabulum) and with the other hand grasps the lower leg, flexing the stifle.

One traction towel is looped over the crook of the flexed stifle with the ends directed ventrally and grasped by an assistant. The other traction towel is looped under the thigh, with the ends directed dorsally and grasped by another assistant. The operator is now in position to guide the leg with one hand and the femoral head with the other. The two assistants are ready to apply opposing pressure to the hip joint.

After sufficient pull on the limb to break the adhesions, the hip and knee are both flexed and the hip is strongly abducted. Traction is then applied and the limb is swung in a complete arc from the hip joint while the operator's thumb pushes, lifts, and guides the head of the femur into place. If this maneuver is properly executed, the leg, as it travels in its arc, will reach a point at which the head of the femur will slip over the rim of the acetabulum into place.

The direction of the arc differs in anterior and posterior dislocations. In replacing anterior dislocations, traction is applied in a posterior direction and the arc proceeds anteriorally. In posterior dislocations, this process is reversed.

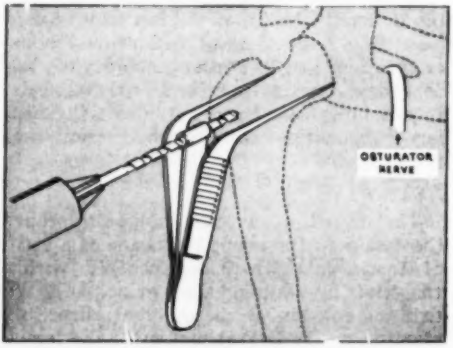

Fig. 2—The drill jig (left). After the hip is in its proper position, using the surgeon's finger as an indicator, the shafts of the drill jig are passed, one on the anterior and one on the posterior surface of the femur in such a position that they pass from a point just ventral to the greater trochanter to the exact center of the femoral head.

It has been our experience that in recent (under three days) luxations of the femur it is neither necessary nor desirable to debride the acetabulum. However, in a large percentage of older luxations, the acetabulum has become filled with fibrous material. In some cases, it is necessary that this material be thoroughly removed before adequate replacement of the femoral head is possible.

Operation, Luxations.—After the hip has been relocated, the patient is prepared for sterile surgery. The incision is made parallel to the long axis of the femur and directly down to the bone. It passes over the hip joint, extending from about 2 inches dorsal to the joint to about 4 inches

ventral to it, and curves anteriorly to avoid the trochanter, then returns to the original line of incision. Using blunt dissection, mostly, the muscles on the anterior surface of the femur are separated from the bone sufficiently to permit the index finger to palpate the femoral head and the rim of the acetabulum; and on the posterior surface to permit insertion of the jig. Determine that the hip is in its proper position, then, using the surgeon's finger as an indicator, the shafts of the drill jig are passed, one on the anterior and one on the posterior surface of the femur in such a position that they pass from a point just ventral to the greater trochanter to the exact center of the femoral head. The drill jig, which determines the direction of the hole, is now in position (fig. 2).

The success of this operation lies in the proper direction of this hole. If it is drilled lateral or dorsal to the correct axis, it does not become the proper point of rotation for the joint. If it is drilled ventral to the correct axis, injury to the obturator nerve is probable.

A 9/64-inch hole for plastic, or 5/32-inch hole for fascia, is drilled exactly in the middle of the femoral shaft, directed by the jig, so that it passes through the femoral shaft, neck, head, and through the acetabulum into the pelvic cavity. The course of the drill should be ascertained as it penetrates the various structures. Cau-

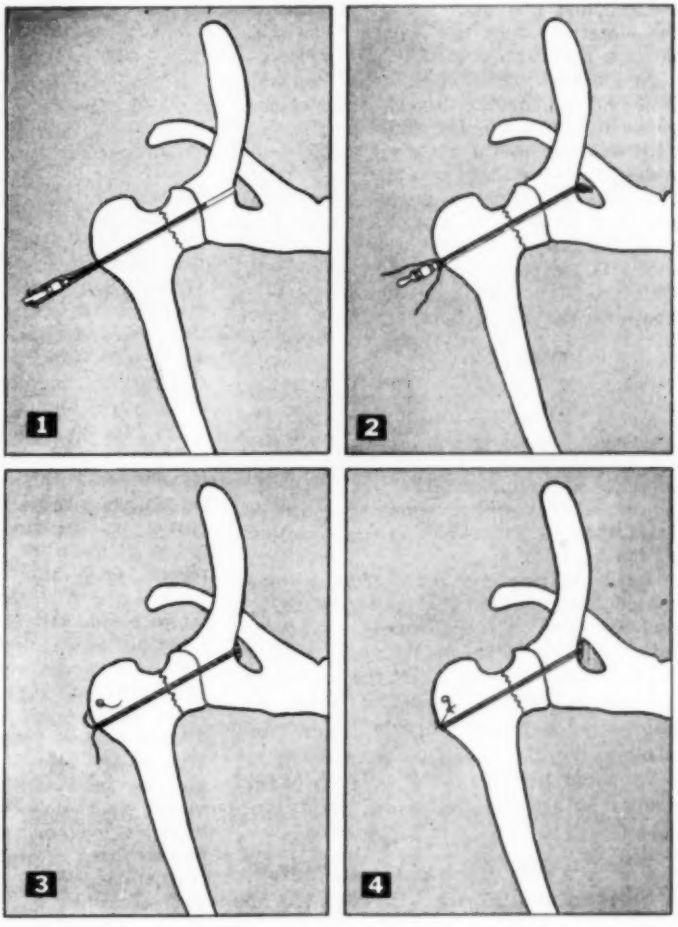

Fig. 3—After the hole is drilled and the bit withdrawn, the toggle pin-cannula assembly is immediately inserted (1). When the toggle pin is in the pelvic cavity (2), it is disengaged from the toggle pin-cannula assembly by inserting the entire length of the trochar into the cannula. After the second hole is drilled, one end of the material is passed through the second hole, and returned to the point of emergence from the first hole (3), it is then pulled taut and tied to the other end using a double surgeon's knot (4).

tion should be used as it enters the pelvis. At this point, before the bit is withdrawn, it is imperative that the affected leg be immobilized by an assistant in order that a precise alignment between the hole in the femur and the hole in the acetabulum be maintained. The bit is withdrawn and the toggle pin-cannula assembly is immediately inserted (fig. 3[1]). When the toggle pin is in the pelvic cavity, it is disengaged from the toggle pin-cannula assembly by inserting the entire length of the trochar into the cannula (fig. 3[2]).

Leaving the trochar and cannula in place, tug at the free ends of the ligament replacement material until the toggle pin has been firmly lodged against the medial wall of the acetabulum. Then remove the trochar and cannula. While pulling on the material, press the femoral head deep into the acetabulum until no slack remains.

At a convenient location, using the same drill and bit, drill a second, anterior-posterior hole through the trochanter major. Pass one end of the material through the second hole (fig. 3[3]), return this end to the point of emergence from the first hole, pull taut, and tie to the other end using a double surgeon's knot (fig. 3[4]). If fascia is used, the knot should be sutured. Test the union by applying firm lateral pressure and rotation to the femur. If the reduction is satisfactory, close the wound in the usual manner.

Operation, Fractures.—In repairing fractures involving the hip, the approach and technique are almost identical with that for repair of luxations. The difference is that in fractures the object is the realignment of bone fragments, while in luxations it is reëstablishing the continuity of the hip joint.

The bone fragments are aligned by proper manipulation (usually extension) of the leg and are held in the precisely correct position by the surgeon and his assistant while the hole is drilled and the toggle pin-cannula assembly is inserted. From this point, the operation proceeds as described above.

To avoid trauma, the fracture reduction should be accomplished as gently as possible.

CASE HISTORIES

Seven case histories will illustrate the various circumstances under which this operation has been used.

Case 1.—A blonde Cocker Spaniel, male, 5 years old, was presented on Feb. 17, 1953, carrying the left hind leg, and with a history of possible automobile injury. A radiograph revealed dorsal luxation of the left hip.

On February 18, the femur was replaced and the area around the trocanter major was "spot injected" with caparsolate sodium in an effort to induce enough swelling to retain the hip. The patient was discharged the next day. On February 25, the patient was returned; the luxation had recurred. On February 26, the luxation was again reduced by our operation as described, using fascia lata. Healing was uneventful.

Case 2.—A mixed breed female, 4 years old, was presented with a dorsal luxation of the right hip.

On September 8, the hip was replaced and operated on as described, using plastic material. On October 3, the patient was walking normally.

Case 3.—A mixed breed female, 3 years old, had luxation of both hips. Both were replaced on July 11, 1952.

On July 17, the left hip was firmly in place but the right hip had reluxated. After it was repaired as described, using fascia lata, recovery was uneventful.

Case 4.—A mixed breed male, 8 months old, had a luxation of the left hip and a sagittal fracture of the distal one-third of the same femur.

On Jan. 30, 1953, the hip was repaired by our method, using fascia lata. The incision was then extended ventrally to permit open reduction and intramedullary pinning of the fracture, care being taken not to let the point of the pin cut the newly placed fascia lata.

Case 5.—A male Doberman Pinscher, 5 years old, had a dorsal luxation of the right hip of three months' duration. Radiographs showed a well-developed false joint; the leg was quite atrophic from disuse.

On January 6, the femoral head was dissected free from the false joint, the acetabulum debrided as well as possible, and the head was returned to the acetabulum. The femur could not be freed sufficiently from its abnormal attachments, so there was considerable tension from the gluteal muscles. The hip was operated upon according to our method, using plastic

because of its greater tensile strength. After three days, the femur returned to its false joint, so further attempts at correction were abandoned.

Fig. 4—This radiograph, taken Jan. 30, 1953, shows the fractures of the neck and of the distal third of the left femur of case 4.

Case 6.—A Boxer female, 5 months old, was presented on March 19, 1953, with a sagittal fracture of the neck of the left femur, allowing dorsal displacement of the shaft.

The leg was extended, the fracture aligned, and the bone was then drilled and repaired as described.

The affected member was carried five days then was used gradually. The patient walked normally in a month.

Case 7.—A male Boxer, 1½ years old, was presented Nov. 24, 1952, with a history of being an extremely active dog subject to recurrent lameness in the left hind leg. His back was arched, typical of congenital subluxation, and he was carrying the left hind leg. Radiographs showed a shallow acetabulum on each side and luxation of the left hip.

On November 28, the luxation was reduced according to our method, using canine fascia lata. The recovery period was longer than usual but seemed complete, so he was allowed to resume his extremely active play.

On March 21, 1953, the dog was presented again carrying the left hind leg. It was decided to reëxamine the operative area and if possible to do a "bucket handle" acetabuloplasty.[14] The round ligament inserted in the previous operation was intact and was confining the femoral head with only a small amount of play. The joint capsule on the dorsal surface of the femoral head was thick and heavy, nature obviously having made progress toward building an adequate acetabulum. It seemed likely

Fig. 5—Taken the same day as figure 4, this shows the repair of the femoral neck fracture by fascia transplant and repair of the fracture of the shafts by intramedullary pinning.

Fig. 6—Taken on February 19, this radiograph shows healing of both fractures.

that in time the joint would become adequate. However, since the exposure had been made, the acetabuloplasty was performed and the joint capsule reinforced with bone.

By April 16, he was using the affected leg well but favored it slightly. It appeared normal except for considerable enlargement at the hip area.

SUMMARY AND COMMENT

A description of an original surgical technique for the correction of recurrent luxation of the femoral head and/or reduction of fractures of the head and neck of the femur is presented.

This operation has been performed on 27 patients.

We feel that recurrent femoral luxations are more frequent and troublesome than the literature would indicate.

In our experience, an attempt at complete immobilization of the hip for a sufficient length of time to permit adequate repair of damaged tissue is not a practical procedure.

We feel that the success of this technique is due in a large measure to the fact that it is relatively atromatic, that it is based on replacement of the round ligament of the femoral head using the toggle pin bolt principle, that it is physiological, and that it permits continued action of the hip joint.

Fig. 7—This radiograph, made on June 17, shows a complete healing of both fractures. At this time, the patient had normal use of the affected limb.

We feel that this technique is relatively simple and within the scope of anyone who can successfully manage the technique of open fracture reduction.

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Ruptured Bladder in an Aged Bitch

An 11-year-old crossbred Labrador Retriever was dull, lethargic, with a temperature of 102.8 F., and a rapid and weak pulse; the membranes were congested and the abdomen distended. Six years previously she had a vaginal tumor successfully removed. For three weeks urination had seemed difficult and frequent but in the past five days, although she occasionally postured, she did not strain and no urine was voided.

Upon laparotomy, about a gallon of blood-stained fluid escaped from the peritoneal cavity. Extensive peritonitis involved the bladder which was collapsed, grossly thickened, and had lost much of its elasticity. Near the neck on the dorsal surface was a 1-inch ruptured opening with the borders ¼ inch thick. Chronic cystitis had apparently existed prior to rupture. After instilling penicillin ointment, the bladder wound was sutured with No. 2/0 twenty-day chromic catgut and the operation completed. She was given 600,000 units of penicillin intramuscularly daily and catheterized twice daily for five days. Incontinence was noted on the seventh day and continued for nearly five weeks, after which she made a satisfactory recovery.—*Irish Vet. J., July, 1953.*

Corticoids and Parturient Paresis

Reports on studies of corticoid and steroid excretions in the urine of cows with parturient paresis have not been found in the literature. At the Royal Veterinary College, Stockholm, urine samples were studied from nonpregnant cows, cows in the last month of gestation, cows immediately after calving and four to eight weeks after calving, and cows with parturient paresis. Both corticoids and neutral steroids increased during pregnancy, then dropped rapidly afterward and were much below normal, especially corticoids, in milk fever cases. This could be interpreted as adrenal cortical exhaustion similar to Addison's disease in man, and to eclampsia in women. Reports on treatment of parturient paresis with ACTH and corticoids are awaited.—*Brit. Vet. J., Sept., 1953.*

Urea for Pregnant Ewes

A three-year study indicates that protein supplements containing 10 per cent urea caused no undesirable effects on pregnant ewes (S. Dak. Agric. Exper. Sta. *Bull. 425*). Urea is more effective when the protein supplement contains at least 75 per cent alfalfa meal. When sufficient carbohydrates are fed, 5 to 10 per cent urea may be safely added to the protein supplement.

Effect of Growth Stimulators on Blood Clotting in the Chick

When a group of chickens raised in a laboratory on a certain diet developed subcutaneous and intramuscular hemorrhages as early as three weeks after hatching, others were started on the same low vitamin K diet. Since vitamin K is synthesized in the intestinal tract, the effect of growth stimulators was tested. When arsonic acid, arsanilic acid, or terramycin were added to this diet, the clotting time of the blood was almost doubled. On the other hand, when vitamin K was added the clotting time was greatly reduced. The growth stimulators, by affecting the bacteria of the intestine, may have reduced the synthesization of vitamin K.—*Science, Oct. 2, 1953.*

The Tampon Method of Collection and the Examination of Cervicovaginal Mucus for *Vibrio Fetus* Agglutinins

W. N. PLASTRIDGE, Ph.D.; H. L. EASTERBROOKS, D.V.M., M.S.;
L. F. WILLIAMS, M.S.

Storrs, Connecticut

IT HAS been observed that *Vibrio fetus* agglutinins occur in the cervicovaginal mucus of some infected cows that react negatively to the blood-serum agglutination test for vibriosis.[2-5] This has stimulated research into the development and interpretation of a vaginal mucus test for vibriosis.

Two procedures for collecting vaginal mucus have been described: (1) Terpstra and Eisma[4] collected it with a special pipette, 50 cm. in length and bent at an angle of 30 degrees about 10 cm. from one end. The pipette was passed into the vagina and mucus was drawn into the bent end. The pipette was then withdrawn and the mucus expelled into tubes of saline solution for future testing. (2) A tampon or gauze pad is used to collect mucus from the anterior portion of the vagina in the area of the cervix. This method, which has found more favor with the authors for practical reasons, was originated by A. Jepson and T. Vindekilde, Royal Veterinary and Agricultural College, Copenhagen, Denmark, and was described by Szabo.[5] It was demonstrated by Dr. Jepson while visiting at Storrs in the summer of 1950.

Reports of Plastridge *et al.*[3] and Plastridge and Easterbrooks[2] indicate that the vaginal mucus (tampon) test is a useful supplement to the blood test in the diagnosis of infertility associated with vibriosis.

The purpose of this paper is to describe the tampon method of collecting cervicovaginal mucus and a procedure for testing the mucus for *V. fetus* agglutinins.

COLLECTION APPARATUS

The apparatus consists of a speculum, a plunger, a gauze pad (tampon) tied to a length of string, as shown in figure 1, and a tube of formalized phosphate buffer solution (pH 7.2).

The Speculum.—The speculum is prepared by cutting 16-in. lengths of ¾ in. (outside diameter) pyrex tubing and flame-polishing both ends to assure smoothness. It is desirable, if not essential, that heavy walled tubing (approximately ⅛ in. thick) be used to avoid excessive breakage. Breakage within the cow has not occurred when heavy walled speculums have been used.

The Tampon.—The tampon is constructed from a 3 by 3 in., 16 ply, all gauze (mesh 20 by 12 count), type VII, U.S.P. pad. Such pads are supplied by all of the major bandage manufacturers. Since the apparatus is sterilized after packaging, it

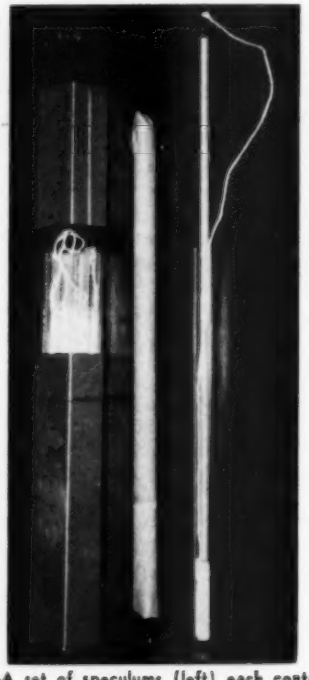

Fig. 1—A set of speculums (left) each containing a tampon with string attached; also one with plunger inserted ready for use.

From the Department of Animal Diseases, Storrs Agricultural Experiment Station, University of Connecticut, Storrs.

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Presented before the Western Massachusetts Veterinary Medical Association, Springfield, Mass., March 18, 1953.

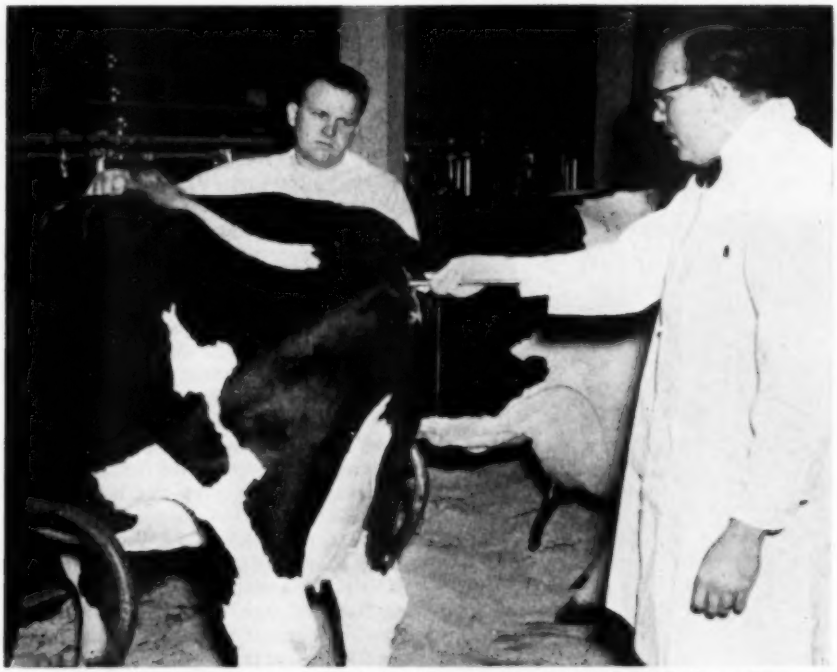

Fig. 2—The apparatus has been inserted until the speculum is in contact with the cervix.

Fig. 3—After pushing the tampon out of the speculum with the plunger, both the plunger and the speculum have been withdrawn. The tampon is left, with string attached, in the anterior vagina.

is not necessary that individually wrapped sterilized pads be purchased.

An entire pad is rolled tightly and tied ½ to ¾ in. from one end of the roll with a strong 26-in. string. Tying the pad at this point prevents it from doubling upon itself when retrieved.

Fig. 4—The tampon has been withdrawn from the vagina and is being placed in a tube of formalized buffer solution.

The Plunger.—Originally, ¾ by 20 in. glass rods with flame-polished ends were sterilized individually with each unit, but now 20 in. aluminum rods are used, thus eliminating the problem of breakage. One plunger serves to apply all tampons in a herd and may be rinsed in antiseptic solution and wiped with a clean towel between applications if desired. Actually, the plunger need not become contaminated by contact with the cow if care is employed in its use.

The Buffer Solution.—Sorensen's phosphate buffer solution (pH 7.2) is prepared, as described by Clark,[1] and 0.3 per cent formalin is then added. One liter of the solution contains:

$Na_2 H PO_4 . 2H_2O$	8.313 Gm.
$K H_2 PO_4$	2.723 Gm.
Formalin (neutralized to pH 7.0 ± 0.2 by adding lithium carbonate)	3.0 ml.

The solution is dispensed in 15-ml. amounts into 1 by 6 in. rubber-stoppered test tubes.

Sterilization and Storage.—The tampon assemblies may be wrapped individually in paper or placed in suitable metal containers (fig. 1) for sterilization in a hot air oven (3 hr. at 150 C.). Rectangular pipette cans (Fisher Cat. No. 3-475) hold six tampon assemblies and are convenient to use.

THE COLLECTION PROCEDURE

The necessary equipment includes the tampon assembly, scissors, and soap and water. Figures 2 through 5 show the steps in the collection process.

Applying the Tampon.—It is desirable to have an assistant stand beside the cow and hold her tail out of the way. The vulva and surrounding area are washed thoroughly with soap and water and then rinsed.

Next, the vulval opening is lubricated with soap or a product such as "KY" jelly." The tampon assembly including the plunger is inserted into the vulva, gently rotating the speculum if necessary to gain entrance, and is passed into the tract until it contacts the cervix (fig. 2). Then by pushing the plunger the tampon is expelled. The speculum and plunger are then withdrawn leaving the tampon within the cow and the attached string hanging from the vulva (fig. 3). The string should be cut so as to leave approximately 6 inches exposed. When a longer string is left hanging, it may get caught around the cow's tail and the tampon may be pulled out of the vagina.

Retrieving the Tampon.—The tampon is routinely permitted to stay in the vagina for thirty minutes but successful tests have been obtained in as little as fifteen to twenty minutes or as long as three to four hours. However, when left in for the longer periods, an excess of mucus may interfere with the test.

The tampon is retrieved by a gentle but steady pull on the string. With reasonable care, very little fecal contamination of the tampon occurs.

Each tampon is placed in a labeled, rubber-stoppered test tube containing 15 ml. of the formalized buffer solution (fig. 4). The string is cut near the tampon, the stopper applied, and the test tube shaken thoroughly for a few seconds before being placed in a wire rack for transportation to the laboratory.

TEST FOR VIBRIO FETUS AGGLUTININS

Collected samples may be tested immediately but by preference they are permitted to stand in a refrigerator over night. Samples have been refrigerated up to four days and also have been received by mail from some distance without apparent effect on the results of the test.

Preparation of the Material to Be Tested.—First, extract the mucus from the tampon (fig. 5) by alternately compressing and releasing the tampon within the buffer solution by use of a pair of 8-in. forceps, then squeeze out its fluid content. The liquid is then poured into a standard 15-ml. centrifuge tube and the tampon is discarded into an antiseptic solution. Samples are centrifuged at about 2,000 r.p.m. for twenty minutes to throw down debris and undissolved mucus.

The Test.—Procedures used for antigen production and standardization have been described elsewhere.[3] It must be remembered that tests for vibriosis are of little value unless made with antigen which has been carefully checked for specific agglutinability by known positive serums, and also for nonspecific agglutinability by serums from either virgin heifers or a number of cows with no recent clinical evidence of vibriosis. Use of antigen of poor quality and tests made on mucus from cows in heat will give misleading results.

For each sample to be tested, four ½ by 5 in. test tubes are labeled and arranged in a rack. To tubes numbered 2, 3, and 4, 2 ml. of dilute *V. fetus* antigen, corresponding in density to 1.5 on the McFarland nephelometer scale, are added. Using a pipette, 4 ml. of supernatant from the centrifuge tube is placed in tube 1. Also to tube 1, concentrated *V. fetus* antigen is added so that the final density approximates that of 1.5 on the McFarland scale. This usually requires the addition of 0.04 ml. of the concentrated antigen now used.

Using a Cornwall automatic syringe adjusted to 2 ml., multiple dilutions are made by first mixing the material in tube 1 and carrying 2 ml. to tube 2, and then proceeding through the remaining two tubes, finally discarding 2 ml. from the last tube. The tubes are stoppered, placed in an incubator at 37 C., then examined for agglutination after forty-eight hours, and again after standing an additional twenty-four hours at room temperature. Routinely, only the final reading is recorded.

Interpretation of Results.—The results obtained suggest that when the antigen used is specifically agglutinable by known positive blood serum and gives titers of less than 1:25 with blood serums from normal cows or heifers, reactions may be interpreted as shown in table 1.

Fig. 5—The mucus is being extracted by compressing and releasing the tampon, in the buffer solution, with forceps.

Less than 5 per cent of the samples tested have given reactions that were unreadable owing to precipitation of mucus.

The significance of reactions in relation to time of exposure to infection and duration of infection remain to be determined.

TABLE 1— Interpretation of Results

Tube 1	Tube 2	Tube 3	Tube 4	Result
— or *i*	—	—	—	Negative
+	*i*	—	—	Suspicious
+	+	*i*	—	Positive
+	+	+	*i* or +	Positive

Use of the Tampon Test.—Cows and heifers with present or recent clinical evidence of vibriosis should be examined by both the blood serum and the cervicovaginal mucus-agglutination tests. Cows and bred heifers for addition to a herd should be purchased subject to both tests. For the detection of possible infection in a bull negative to the blood test, he should be allowed to serve several virgin heifers and

the heifers should be examined by the cervicovaginal mucus test about four weeks after service.

SUMMARY

A practical procedure for collecting cervicovaginal mucus by the tampon method and examining the material for *Vibrio fetus* agglutinins is described.

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Uterotubal Insufflation in the Cow

S. Hanley, M.R.C.V.S., of Dublin, using an ingenious tube, has been able to insufflate the bovine uterus and test the patency of the fallopian tubes. The tip of the apparatus consists of a long teat tube, to be passed through the cervix, with a rubber balloon near its tip which, when inflated, prevents the escape of the insufflating carbon dioxide gas.—*Irish Vet. J., Aug. and Sept., 1953.*

Anesthetics for Domestic Fowl

Five anesthetics were tested on geese, ducks, chickens, and pigeons. Ether and chloroform were unsatisfactory because of their slow action, short duration, and the frequent sudden deaths. Chloral hydrate, given orally at 0.15 Gm. per pound, was most satisfactory except in pigeons; they frequently vomited it.

In other birds, it produced anesthesia in thirty minutes, which was maintained for thirty minutes or longer. The short duration of anesthesia and lack of safety made sodium pentothal unsatisfactory but sodium amytal was satisfactory for geese and ducks.—*Poult. Sci., July, 1953.*

Treatment of Hydrops Amnii with ECP®

F. J. MILNE, M.R.C.V.S., D.V.M.

Guelph, Ontario

The successful treatment of hydrops amnii has long baffled veterinarians. While several reports of successful cases have been recorded in the literature, the methods used have often proved unsuccessful when attempted by other veterinarians under similar circumstances. In other words, the prognosis of this condition in the cow still justifies an unfavorable outlook.

A review of the writer's cases over the past few years has brought out the following difficulties when attempting treatment: (1) the reluctance of the cervix to dilate, and (2) the tendency toward retention of the fetal membranes when the fetus is removed before term—a sequel of most cases of premature delivery whether by the vaginal route or by cesarotomy.

A point which has given rise to controversy is the manner of liberation of the pent-up fluids. While the belief is prevalent that rapid removal of these fluids may shock the patient, cases are on record where all the fluids have been removed in less than five minutes[1,2] and the patients have survived the necessary cesarean section.

Previous attempts at cesarean section by the author were unsucessful. In one case, the membranes could not be removed at the time of surgery and the cervix remained closed, leading to a refilling and rupture of the uterus within forty-eight hours despite all attempts to relax the cervix by means of the then available hormones. In another case, cervical dilatation did occur, but metritis and death followed, due presumably to the atonic and distended uterus, allowing infection to overwhelm the resistance of the animal.

This is a report of 2 cases in which dilatation of the cervix was initiated by the use of estradiolcyclopentylpropionate (ECP®), with later delivery of the calf per vagina and recovery of the cow.

CASE REPORTS

Case 2-4596.—A 7-year-old Guernsey, six months pregnant, was admitted to our clinic suffering from a severe abdominal disten-

From the Department of Medicine and Surgery, Ontario Veterinary College, Guelph.

sion and pronounced diarrhea. Hydrops amnii was diagnosed and 8 mg. of ECP was given intramuscularly. In forty-eight hours, the cervical seal was breaking down and the cervix admitted the passage of one finger. In another twenty-four hours, the membranes were ruptured by inserting a uterine catheter through the cervical canal. Drainage of the allantoic fluid was accelerated by substituting a flexible metal horse catheter for the uterine catheter. The tube was left in place overnight, and next morning the cow appeared to be in a state of shock despite the fact that an obvious amount of fluid still remained in the uterus. Shock was combated by transfusion of whole blood followed by a glucose-saline solution. By this time, the amniotic sac was at the cervix, which now permitted the passage of a hand. A 6-month fetus was delivered in posterior presentation after the application of slow traction.

Posterior pituitary extract (6 cc.) was given intramuscularly to stimulate uterine involution. Treatment from then on was symptomatic. Some fetal membranes were manually removed three days after delivery of the fetus, but seven days had elapsed before all the retained membranes could be removed. Recovery was slow but the cow was eventually discharged thirteen days after admission; her milk yield at that time was approximately 1½ gallons per day. The owner reported six months later that he had sold the cow since she was no longer an economic asset.

Case 3-1375.—A 6-year-old Shorthorn was eight months pregnant when admitted to the clinic. Two years earlier, the cow had twins delivered by embryotomy. The owner thought that the cow was again carrying twins and consequently did not seek advice until the cow went off feed and developed dyspnea.

After the condition was diagnosed, 6 mg. of ECP was given intramuscularly; eight hours later, the cervical seal was noticed to be breaking down. By the next morning, the seal was no longer evident and the cervix admitted one finger. Drainage of the uterus was commenced as in the first case and some 30 gallons of allantoic fluid were withdrawn in about 30 minutes, to the obvious relief of the patient.

Manual dilatation was unsuccessful, so a mare cervical dilator was applied. After fifteen minutes, the cervix admitted four fingers. The second cervical ring was particularly resistant so vaginal hysterotomy was then carried out by incising the tissue of this ring, at the 8-o'clock position, until the cervix permitted the hand to enter the uterus. The feet of the fetus could be touched but not grasped, so the cow was led up a slope, the fetal hind limbs seized and chained and delivery accomplished by slow traction. The cow fell down at this point in apparent shock but was able to walk back to her stall soon after the administration of 2.5 cc. of posterior pituitary extract (double strength). Examination did not reveal a second fetus. The delivered calf, comparable in development to an 8-month fetus, was alive at birth but soon died in spite of administration of oxygen.

Late that afternoon, the cow was up and eating and looking remarkably well. The next morning a second fetus was found dead in the stall. Both fetuses had occupied the right horn of the uterus. Most of the membranes from the first fetus were removed at the time of delivery, but thirty-six hours elapsed before the second set of membranes could be manually removed.

For the next four days, the animal appeared to be suffering from abdominal pain and anorexia although it eagerly sought the salt lick. Treatment during this period consisted of systemic penicillin and the oral administration of rumen stimulants and a mineral mixture. After this, recovery was uneventful and the cow was discharged on the ninth day when the milk yield had risen to one gallon per day.

Conclusion.—It is not suggested that estradiolcyclopentypropionate is the specific treatment for hydrops amnii, but these 2 cases, along with the observations of Wolfe *et al.*,[3] stimulate the thought that this agent has a relaxing effect on the cervix; consequently, even though vaginal delivery may be impracticable, cesarean section could be carried out without the likelihood of the uterus refilling or other sequelae of a closed cervix.

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Dangers of Hypodermoclysis

The introduction of fluid into subcutaneous tissue is commonly assumed to be a benign process. However, the injection of a person with 5 per cent glucose may be followed by a persistent increase in leg volume lasting for several hours before absorption commences. Hypotonic sodium chloride solution is absorbed much more rapidly. Apparently, a glucose solution must come into equilibrium with body fluids before being absorbed. The local injection of hyaluronidase will increase the diffusion rate but its effect upon absorption rate is not so marked. In one instance, where 2,000 ml. of 5 per cent dextrose solution was given in a three-hour period, the blood plasma volume decreased 21 per cent in six hours before absorption commenced. Hypotention, tachycardia, and oliguria developed, but normal was restored gradually. Apparently, if possible, solutions of large molecular materials such as glucose, fructose, and amino acids should be given intravenously.—*Nutr. Rev., Aug., 1953.*

Furacin-Soluble Powder for Wounds

Nitrofurazone applied as furacin solution or mixed in carbowax and powdered was used on infected human wounds, most of which had failed to respond to antibiotic therapy. It was usually applied as a powder without a dressing. Of 86 wounds, 65 healed or became sterile in two weeks, 13 showed marked clinical improvement, and eight did not respond. No evidence of toxicity or sensitivity developed.—*Am. J. Surg., Oct., 1953.*

Sepsis from Surgical Linen

A weak link in the asepsis chain during surgery is the surgical linen which becomes wet. Whereas dry cloth would prevent the migration of bacteria, they readily pass through two layers of wet cloth. Surgical linen may become wet from perspiration of the patient or surgeon, from irrigating solutions, or from instruments. Plastic drapes have been suggested but they are expensive and allow little ventilation; and the surgeon's garments remain. Therefore, impregnation of existing surgical linen with a bactericidal substance has been attempted. Roccal and hexachlorophene were considered satisfactory germicidal agents except that the latter is insoluble in water. When roccal is added to the last rinse of laundry in the dilution of 1:2,500 it satisfactorily inhibits the transmission of bacteria.—*Am. J. Surg., Sept., 1953.*

Congenital Diaphragmatic Hernia.—A newborn foal was dead when found. Autopsy revealed an incomplete diaphragm with most of the stomach, spleen, liver, and large colon prolapsed into the left thoracic cavity. The right lung seemed normal and portions floated on water, indicating that death was postnatal.—*Irish Vet. J., July, 1953.*

Vasectomy of Brahman Bulls

In Orissa, India, an attempt was made, in 1950, to improve the quality of native cattle by artificial insemination. This effort was hampered by the presence of too many Brahman bulls. These nondescript scrub bulls could not be slaughtered because of religious sentiment. There was also considerable objection to castration but none to vasectomy. The operation is done under epidural anesthesia by excising about 2 inches of the vas deferens, an inch above the testicle, from a posterior approach. Vasectomized bulls then roam with the herd as teasers.—*Indian Vet. J., July, 1953.*

Animal Birth Control.—Birth control for cats and dogs is the most fundamental problem confronting organized pet lovers. It is cheaper than present expenditures for eliminating the annual surplus. The A.S.P.C.A. of New York annually kills about 200,000 dogs and cats. Of 80,000 animals impounded in Los Angeles, 58,000 were destroyed.—*All Pets Mag., Oct., 1953.*

If you cut well and sew well your patient will get well.—*Am. J. Surg., Sept., 1953.*

Vitamin B_{12} and Fertility in Sows.—Sows and gilts on a purely vegetable diet produce smaller and weaker litters than those given animal protein. This is attributed to a deficiency of cyanocobalamin (vitamin B_{12}).—*Vet. Bull., Sept., 1953.*

CLINICAL DATA

An Examination of the Valves of the External Jugular Veins of the Ox with Reference to the Selection of a Site for Venipuncture

R. A. KAINER, D.V.M., M.S., and W. M. DICKSON, D.V.M., M.S.

Pullman, Washington

THE EXTERNAL jugular vein, the main route of intravenous injection in the ox, does not appear to have been adequately described. Textbooks of anatomy[1-5] do not give detailed descriptions of the vein, even failing to agree on the basic nomenclature. A description of the internal jugular vein in the ox (and its absence in the small domestic ruminants), the radicles of the jugular veins, and the distribution of valves are not treated consistently by the authorities cited. Other specific references to the external jugular vein were not discovered.

Occasionally, even though an external jugular vein is distended, venipuncture fails to produce a flow of blood through the needle. A subsequent attempt in a slightly different locus will produce the desired result. This occurs often enough to question the cause of the needle's initial obstruction. Occlusion of the lumen of the needle with a fragment of tissue has been suggested. This tissue could have been either a small piece of skin or perhaps a valve in the vein.

This study was undertaken to determine the distribution of valves in the external jugular vein with reference to establishing the ideal site for venipuncture.

MATERIALS AND METHODS

The external and internal jugular veins and their radicles were dissected in 52 cattle. Animals of different ages, breeds, and sex were represented. Thirty-nine of these were embalmed cadavers and 13 were clinical cases dissected at necropsy.

The length of the external jugular vein was measured *in situ* to the nearest centimeter from the entrance of the external jugular vein into the anterior vena cava to the convergence of the internal and external maxillary veins. The internal jugular veins and the jugular radicles were noted as they were dissected and excised. The anterior vena cava was transected in the vicinity of the entrance of each axillary vein. Then the jugular veins and the initial parts of their radicles were removed together.

Using *in situ* measurements as a guide, the external jugular veins were pinned to a paraffin dissecting tray. A longitudinal incision revealed the tunica intima of each vein. The distribution of the valves, the number of cusps constituting each valve, and any evidence of trauma to the vein were noted. The distance from the entrance valve (V_1) at the anterior vena cava to the second valve (V_2) anterior to the entrance valve, and the

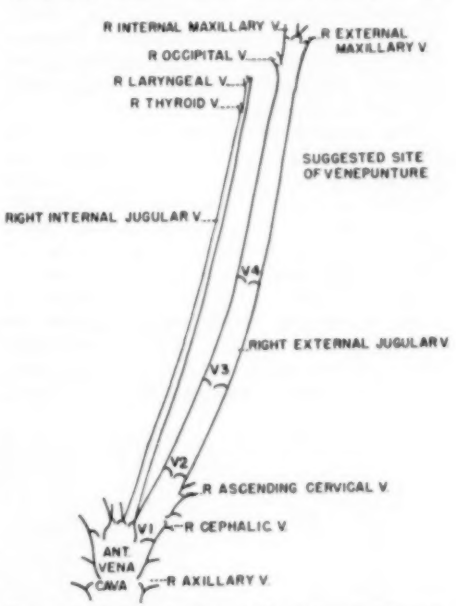


Fig. 1—Schematic drawing of the commonest jugular vein pattern. Dorsal view with the position of the major radicles somewhat distorted for simplicity. V = valve. (The valves of the internal jugular vein are omitted.)

From the College of Veterinary Medicine, State College of Washington, Pullman. Dr. Kainer is now at the School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater.

TABLE 1—Distribution of External Jugular Veins in Different Breeds of Cattle According to Number of Valves per Vein

Number of valves	Number of veins					Total number of veins
	Guernsey	Hereford	Holstein-Friesian	Jersey	All others	
2	2	0	0	0	1	3
3	13	3	1	1	4	22
4	12	14	6	7	2	41
5	6	12	2	4	6	30
6	2	1	0	2	1	6
7	1	0	1	0	0	2

distance between the following valves (V_3, V_4, V_5, etc.), were measured. The intervalvular distances were measured to the nearest 0.5 cm. between the convexities of the cusps of subsequent valves. The final valve in each vein was the valve nearest the convergence of the internal and external maxillary veins.

RESULTS

There was a high correlation ($r = +0.8732$) between the mean length of the two external jugular veins and the age of the animal in all animals up to 1 year of age. There was very little correlation ($r = +0.2500$) between age and vein length in animals 2 years old and older. Therefore, the animals were divided into two groups for statistical evaluation of the data. Since there were no significant variations between right and left jugular veins on individual animals, both left and right veins were included in the statistical analyses.

The number of valves per vein varied from 2 to 7, averaging 4.38. There appeared to be a definite breed effect on the number of valves. Herefords generally had either 4 or 5 valves, while Guernseys had either 3 or 4 valves. The number of valves was not correlated with age or weight. Table 1 gives the number of veins in various valve-number groups for the different breeds. The means with the standard deviations are given in table 2 and are represented graphically in graph 1 for all animals 2 years old and older. Inasmuch as veins with 3, 4, and 5 valves represented 90 per cent of those studied, graph 1 includes only these veins.

In animals up to 1 year of age, there was a high correlation between the vein length and the valve distribution when actual linear measurements were used. For this reason, the measurements were converted to a percentage of the total vein length; this was also done for older animals to afford a means of comparison. These data, presented in table 3, reveal that the distribution of valves in the young animal is similar to that of older animals.

The majority of the valves examined had two semilunar cusps. Occasionally, the valves in the anterior part of the vein had three semilunar cusps. A valve with a single cusp was rarely encountered.

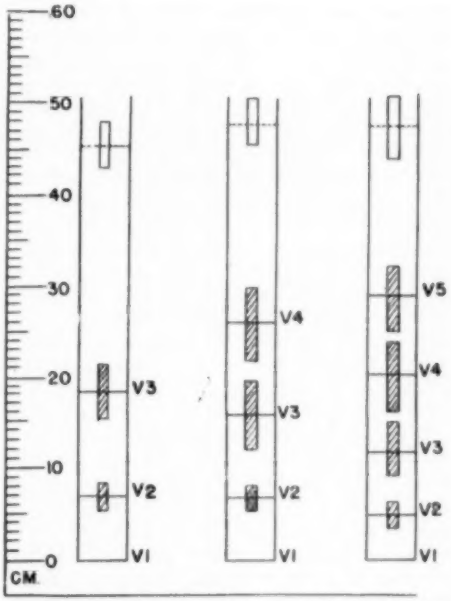
While examining the distribution of the valves in the external jugular vein, the pattern of its radicles and the extent of the development of the internal jugular vein were also noted. In the commonest pattern observed, the internal and external maxillary veins converged to form the external jugular vein which almost immediately received the occipital vein. There was a variable number of small cervical branches. The ascending cervical and cephalic veins entered the posterior part of the external jugular vein between valves V_1 and V_2. Valves with two semilunar cusps guarded the entrances of all the major radicles. The internal jugular vein usually received the laryngeal and thyroid veins and, occasionally, the occipital vein. It then received a few small branches as it pursued its course to the anterior vena cava which it entered close to the entrance of the contralateral vein (*see* fig. 1). Valves present in the internal jugular vein were not measured.

TABLE 2—Mean Distance of Valves from the Entrance Valve (V_1) of the External Jugular Vein in Cattle Over 2 Years of Age—Mean ± Standard Deviation

Valves	Number of valves					
	2	3	4	5	6	7
V_2	7.00 ± 0.00	6.94 ± 1.24	6.67 ± 1.28	4.79 ± 1.16	4.83 ± 0.68	4.00 ± 0.00
V_3	.....	17.90 ± 2.98	15.38 ± 3.31	11.21 ± 2.92	10.83 ± 0.29	8.50 ± 0.00
V_4	.....	.....	25.17 ± 3.93	19.50 ± 3.80	16.30 ± 2.08	16.25 ± 1.77
V_5	.....	.....	.....	27.88 ± 3.57	23.83 ± 2.93	23.75 ± 1.77
V_6	.....	.....	.....	.....	32.33 ± 4.04	29.25 ± 2.45
V_7	.....	.....	.....	.....	.....	36.00 ± 2.83
Vein length	48.0 ± 0.00	44.6 ± 2.13	47.1 ± 2.59	46.2 ± 3.37	45.0 ± 1.03	49.50 ± 6.44

Occasionally, the right and left internal jugular veins formed a common trunk which emptied into the anterior vena cava. Rarely, the internal jugular vein entered the respective external jugular vein between valves V_1 and V_2. The internal jugular veins were absent or poorly developed in several cases. In such instances, the laryngeal and thyroid radicles entered the external jugular vein. Thyro-laryngeal and thyro-laryngo-occipital venous trunks were occasionally observed. Other rare variations included the entrance of the ascending cervical vein into the axillary vein or the internal jugular vein, the entrance of the external jugular vein into the axillary vein, and the occurrence of a median vena thyroid ima which entered a common jugular trunk.

Although this was essentially an anatomical study, sequelae to venipunctures were noted in the external jugular veins. All of the animals had been subjected to venipuncture, large (14-gauge) needles being used on the anatomical subjects. The clinical cases had received intravenous therapy in which somewhat smaller (16-gauge) needles were used. Nineteen perivascular collar hemorrhages, ten around the left external jugular vein and nine around the right, occurred in 52 cattle examined. Some of the collar hemorrhages encircled one-third to one-half of the vein. Trauma to the tunica intima caused by venipuncture was noted in 9 of 13 clinical cases. There were four obturating thrombi, two of which projected from valves located approximately in the middle of the vein. Several mural thrombi were also observed. Collar hemorrhages surrounded all but two of the veins in which damage to the tunica intima was noted.



Graph 1—Graphic representation of the distribution of the valves in the external jugular vein. Solid lines and striped bars represent the mean ± standard deviation. Broken lines and open bars represent the mean ± standard deviation of the vein length in the various valve number groups. The three large bars represent the three most common valve number groups.

DISCUSSION

The distance from the junction of the

TABLE 3—Distribution of Valves in the External Jugular Vein by Percentage of Total Vein Length in Animals Up to 1 Year of Age Compared to Animals 2 Years and Older

Distances (%)	Number of valves per vein									
	Young	Adult	Young	Adult	Young	Adult	Young	Adult	Young	Adult
From valve at ant. vena cava to 2nd valve (V_2)	15.0 (2)	14.6 (1)	17.5 (13)	15.6 (9)	14.3 (11)	14.2 (29)	13.1 (8)	10.4 (24)	14.1 (2)	10.7 (3)
V_2 to V_3	.....	.....	28.4 (13)	24.5 (9)	15.7 (11)	17.5 (29)	11.7 (8)	13.9 (24)	13.4 (2)	13.3 (3)
V_3 to V_4	.....	.....	.....	.....	19.8 (11)	20.8 (29)	14.4 (8)	17.9 (24)	16.8 (2)	12.1 (3)
V_4 to V_5	.....	.....	.....	.....	.....	.....	19.9 (8)	18.1 (24)	19.9 (2)	16.7 (3)
V_5 to V_6	.....	.....	.....	.....	.....	.....	.....	.....	23.9 (2)	18.9 (3)
From internal-external max. junction to last valve	85.0 (2)	85.4 (1)	54.1 (13)	59.9 (9)	50.2 (11)	47.5 (29)	40.9 (8)	39.7 (24)	25.9 (2)	28.2 (3)

internal and external maxillary veins to the most anterior valve of the external jugular vein is of importance in determining the ideal site of venipuncture because this distance represents the greatest area of the vein free of valves. With the exception of relatively few animals, the external jugular vein had 3, 4, or 5 valves. Martin[3] stated that the vein is provided with 3 or 4 valves. The shortest distance from the junction of the internal and external maxillary veins to the most anterior valve was found in animals with 5 valves. Since the valves for approximately 32 per cent of the animals fall outside the range represented by the mean ± the standard deviation, 16 per cent of the veins in the 5-valve group would be shorter than 42.8 cm. (mean minus the standard deviation); using the same reasoning, 16 per cent of these veins would have the most anterior valve lying 31.5 cm. (mean plus standard deviation) or more from the anterior vena cava. Therefore, only 3 per cent of the veins with 5 valves would be likely to have a distance of less than 11.3 cm. between the junction of the internal and external maxillary veins and the anterior valve. The ideal site for venipuncture then would be in the region of the anterior 10 to 12 cm. of the vein. Untoward sequelae to venipuncture, especially thrombi associated with trauma to valves, emphasize the advantage of entering the vein in this region. The region free of valves is slightly greater in breeds such as Guernsey which have a predisposition to fewer valves.

SUMMARY

1) The number of valves in the external jugular vein ranged from 2 to 7, with an average of 4.38 in 52 cattle. There were usually 3, 4, or 5 valves.

2) The region of the anterior 10 to 12 cm. of the external jugular vein was found to be free of valves, and this region is suggested as the ideal site for venipuncture.

3) The radicles of the external and internal jugular veins are described.

4) Untoward sequelae to venipuncture are mentioned.

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Salmonellosis in Foals

Three of 8 newly weaned Thoroughbred foals in a western Australian stable died of salmonellosis. They exhibited high fever, anorexia, and a profuse watery diarrhea. Two showed abdominal pain and died in less than two days. The third was ill a week. Autopsy revealed intense hemorrhagic cecitis and colitis with enlarged regional lymph nodes. *Salmonella typhimurium* was isolated from the heart, liver, and colic nodes. Sulfaguanidine, penicillin, and chloromycetin® were ineffective.—*Vet. Bull., Sept., 1953.*

Control of Salmonellosis in Mice

Breeding colonies of laboratory animals are often troubled with salmonellosis, which is usually more prevalent in the summer. Since the number of organisms ingested determines whether the animal will survive or succumb to this infection, and since temperature has little effect on other items, the water in the cage bottles was tested to determine whether its contamination varied with the season. It was learned that 1 infected mouse could contaminate the water, and that the rate of multiplication of the organisms increased with the temperature. Infection has since been curbed by adding chemicals to the water. The most practical of these is a silver preparation called "movidyn" which, in proper concentration, will keep the water satisfactorily sterile for two to three days in warm weather. —*Carworth Farms Quart. Letter, July 1, 1953.*

Laryngotracheitis in Australia.—For the first time infectious laryngotracheitis has been recognized in South Australia. Two strains of virus have been isolated. Inapparent infection may have been present for some time, since serum from nearly half the chickens tested gave a positive reaction. —*Vet. Bull., Sept., 1953.*

Success in Foreign Rabies Control

A study of rabies control in Israel and Malaya indicates that the program of mass vaccination of dogs with avianized vaccine, plus the destruction of stray animals and control of wildlife, has greatly reduced the number of cases of animal rabies. Classical control measures have been employed previously but not until mass vaccination was used were the results satisfactory. From 1930 to 1950, rabies in animals in Israel varied from 50 to 333 cases annually but only 3 cases developed the first six months of 1953. In Malaya, there were 198 canine cases in 1952 when vaccination was started, and only 15 in the first seven months of 1953.—*W. H. O. News. Sept. 22, 1953.*

Immunology in Aujeszky's Disease

Formalin-inactivated virus did not immunize rabbits against Aujeszky's disease and neither this virus nor active virus plus immune serum would immunize guinea pigs. However, rats, 6 months old or older, could be immunized with active virus and produced virus-neutralizing antibodies. The resulting rat serum would protect mice and guinea pigs.—*Vet. Bull., Sept., 1953.*

Bacilli Which Need Drugs to Grow

Bacterial mutants have been developed which will grow in the presence of antibiotics or sulfonamides to which their ancestors were sensitive. Now a strain of *Microbacterium ranae*, which resembles the tubercle bacillus but is not virulent, has been isolated which will not grow in the absence of isoniazid, the drug which is combined with streptomycin in the treatment of tuberculosis. This phenomenon is relatively rare and of considerable interest. —*Am. Rev. Tuberc., Oct., 1953.*

Bracken Poisoning in Cattle

Bracken poisoning is common in all parts of Great Britain, especially from July to September, even on good pasture with only a small amount of bracken present. In a controlled experiment, 3 cows fed harvested bracken alone died in fifty-six to sixty days after consuming from 280 to 300 lb. of bracken. Two died in fifty-five and sixty-nine days after eating 275 and 350 lb., respectively, of a mixture of bracken and molasses. When bracken was heated for thirty minutes at 210 F., 3 animals remained normal when fed 750 lb. each, over a period of eighty to eighty-three days. Apparently, bracken contains a toxic substance which can be inactivated by heat.—*Vet. Rec., Sept. 5, 1953.*

The Anthrax Bacillus and Antibiotics

Twenty-nine strains of *Bacillus anthracis* recovered from human patients were tested *in vitro* with seven antibiotics. All were uniformly sensitive to chlortetracycline (aureomycin) and to oxytetracycline (terramycin®). All were resistant to polymyxin. The greatest variation in sensitivity was to penicillin, while all were moderately sensitive to streptomycin and neomycin. This correlates well with clinical therapeutic results, since chlortetracycline, chloramphenicol, penicillin, and oxytetracycline exhibit value in cutaneous anthrax in man.—*J. Am. M. A., Oct. 3, 1953.*

Incidence of Fowl Typhoid and Its Control

In 1952, fowl typhoid was identified on 26 Massachusetts farms and clinically diagnosed on 11 others. The disease appears to be on the increase. Sixteen of the infected flocks were in four communities, with definite evidence that the disease had spread from one flock in each community, two of which contained infected birds since 1951. Of the ten scattered flocks, four were on premises known to have previous infections, two were fed raw garbage, and one was close to a dump where dead birds were often thrown.

Survivors of an acute outbreak may appear normal and lay well but remain carriers. Four months after one acute outbreak, 72 per cent of 257 survivors reacted to a blood test and were considered as carriers. Such flocks should be promptly slaughtered. Drugs apparently have no value in controlling this disease.—*World Poult. Sci. J., July, 1953.*

A severe dermatitis of piglets which responds miraculously to treatment with yeast products has been encountered in Britain.—*Vet. Rec., Sept. 5, 1953.*

Treatment of Acute Lead Poisoning in Calves with Calcium Disodium Ethylenediaminetetraacetate

L. W. HOLM, Ph.D.; E. A. RHODE, D.V.M.; J. D. WHEAT, D.V.M.; GLADYS FIRCH, B.A.

Davis, California

NUMEROUS case reports and experimental studies have shown that lead intoxication in ruminants is of the acute type and that cumulative poisoning from the ingestion of subtoxic amounts of lead does not occur in these species.[1,8,9] The susceptibility of calves to lead is well known.

Management of acute lead poisoning has been largely symptomatic. Sedatives have been used to overcome convulsions, $MgSO_4$ to immobilize the lead in the rumen or intestine, and calcium gluconate, administered intravenously, as an antispasmodic. Aside from supportive measures, lead therapy should include the use of agents which form complexes with the lead resident in the tissues to draw it from the tissues. To this end, citrates have been administered to promote the formation of lead citrate.[6] Present knowledge concerning citrates indicates that they are rapidly metabolized by the animal body; hence effective elimination of lead as the citrate complex is limited. BAL (2,3-dimercaptopropanol) has been used with varying success in lead poisoning in human patients, but the consensus among clinicians is that it is unpredictable in its action and that it adds to the toxicity of the lead which is bound to it.

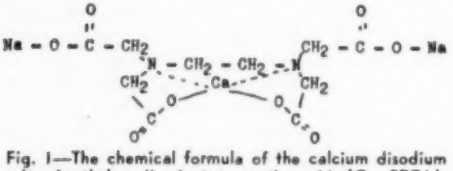


Fig. 1—The chemical formula of the calcium disodium salt of ethylenediaminetetraacetic acid (Ca EDTA).

A new type of complexing agent has been made available recently for investigational use in lead poisoning. It is the calcium disodium salt of ethylenediaminetetraäcetic acid (Ca EDTA)* known commercially as calcium versenate. The formula of this compound is shown in figure 1.

The parent substance, the tetra sodium salt of ethylenediaminetetraäcetic acid (EDTA), complexes with calcium *in vitro* and *in vivo*. Physical data show that the calcium-EDTA bond is much stronger than that of calcium-citrate, and the lead-EDTA bond is much stronger than the lead-citrate bond. When the Ca EDTA is administered to an animal in the presence of lead ions or lead bound loosely to proteins, lead replaces calcium in the molecule to form Pb EDTA, because of the greater stability constant of Pb EDTA. The stability constant of Pb EDTA is 10^8 stronger than that for Ca EDTA.[10] The former compound is not ionizable at physiological pH and hence is nontoxic. The combination of lead in the form of the EDTA complex markedly decreases the toxicity of the lead.[10]

The above considerations and the successful treatment of chronic lead poisoning of horses with Ca EDTA[7] have led us to assess the value of the agent in acute lead poisoning in calves and, insofar as possible, to simulate field conditions of management.

MATERIALS AND METHODS

Seven normal calves were used in these trials. The animals ranged in weight from 120 to 350 lb. Each animal was observed for several days during which time blood, urine, and fecal samples were taken to determine baseline levels. A single dose of lead was administered in capsules in the form of lead acetate at a level of 1 Gm./5 lb. of body weight. Blood, urine, and fecal samples were taken at the same time each day throughout the experimental period. Treatment of the poisoned animals was initiated when marked central nervous system disturbances manifested themselves and when the animals were considered to be in grave danger.

Ca EDTA and adjunct therapy were administered according to the schedule charted. In all cases, Ca EDTA was given as a 25 per cent solution. Adjunct fluids were given according to the degree of dehydration of the subjects.

Tissues and rumen contents of animals 1, 2, 3, and 5 were available at one time or another; the

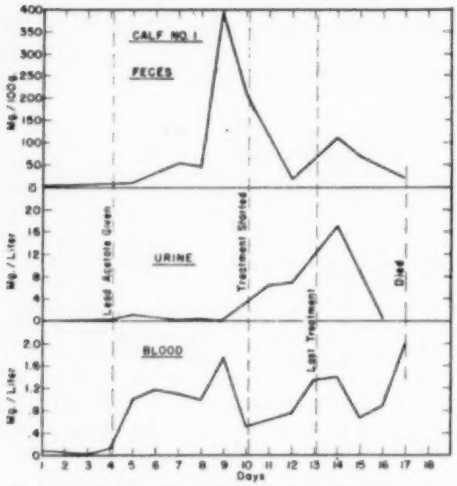
From the School of Veterinary Medicine, University of California, Davis.

*The Ca EDTA used in these trials was supplied to us through the courtesy of Riker Laboratories, Inc., Los Angeles, Calif.

TABLE I—Schedule of Treatment of Calves Poisoned with Lead Acetate

			First course of treatment						Second course of treatment					
Animal & weight	Day treatment started after poison	Animal condition at treatment	1st day	2nd day	3rd day	4th day	5th day	6th day	18th day	19th day	20th day	21st day	22nd day	23-25th days
1 320 lb.	6th	Blind; dehydrated; unable to stand.	205 Gm. $MgSO_4$ orally; 40 cc. Ca EDTA* in 1 liter saline, i.v.	30 cc. Ca EDTA in 1 liter saline-dextrose, i.v., 2 times a day.	40 cc. Ca EDTA in 2 liters saline, i.v.	Same as 3rd day.	(Died) (13th Day)							
2 250 lb.	7th	Same as calf 1; hyperesthetic	40 cc. Ca EDTA in 1 liter saline, s.c.	Same as 1st day.	Same as 1st day.	Same as 1st day.								
3 250 lb.	6th	Same as calf 1; very depressed; marked posterior weakness.	25 cc. Ca EDTA in 2 liters saline-dextrose, s.c.	Same as 1st day but given twice.	15 cc. Ca EDTA in 50 cc. saline, s.c. 2 times a day.	Same as 3rd day.	(Died) (9th day)							
4 350 lb.	5th	Blind; severe convulsions.	Nembutal® to quiet; 10 cc. Ca EDTA, i.v. & 50 cc. Ca EDTA, s.c.	25 cc. Ca EDTA in 1 liter saline, s.c., 2 times a day.	Same as 2nd day.	20 cc. Ca EDTA in 1 liter saline, s.c. 2 times a day.	Same as 4th day.	Same as 4th day.		20 cc. Ca EDTA in 1 liter saline, s.c., 2 times a day.	10 cc. Ca EDTA in 1 liter saline, s.c., 2 times a day.	10 cc. Ca EDTA in 1 liter saline, s.c., 2 times a day.	20 cc. Ca EDTA in 1 liter saline, s.c., once a day.	10 cc. Ca EDTA in 1 liter saline, s.c., once a day.
5 135 lb.	4th	Posterior weakness; marked extension; hyperesthetic; mucoid feces.	2 oz. $MgSO_4$ and 1 pt. skim milk orally; 10 cc. Ca EDTA diluted with 10 cc. saline slowly, i.v.; 10 cc. Ca EDTA, s.c.	dead										
6 140 lb.	4th			10 cc. Ca EDTA + 10 cc. saline s.c., 2 times a day.	Same as 2nd day.	Same as 2nd day.	Same as 2nd day but given only once.	20 cc. Ca EDTA + 20 cc. saline, s.c., once a day.	10cc. Ca EDTA + 10 cc. saline, s.c., 2 times a day.	Same as 18th day.	20 cc. Ca EDTA + 20 cc. saline, s.c., once a day.	Same as 20th day.	Same as 20th day.	
7 120 lb.	4th			10 cc. Ca EDTA + 10 cc. saline, s.c., 2 times a day.	Same as 2nd day.	Same as 2nd day.	Same as 2nd day but given only once.	20 cc. Ca EDTA + 20 cc. saline s.c. once a day.	10cc. Ca EDTA + 10 cc. saline, s.c., 2 times a day.	Same as 18th day.	20 cc. Ca EDTA + 20 cc. saline, s.c., once a day.	Same as 20th day.	Same as 20th day.	

*Ca EDTA was in a 25 per cent solution.



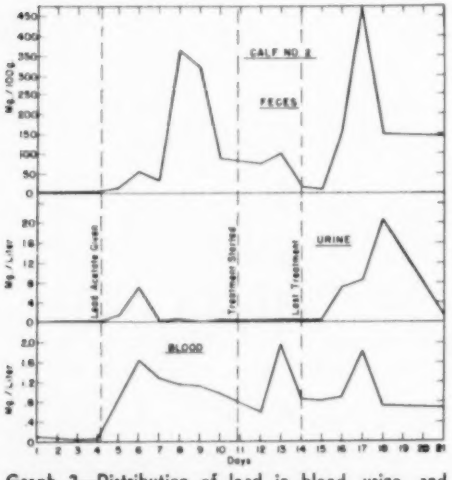
Graph 1—Distribution of lead in blood, urine, and feces of calf 1 during a course of poisoning with lead acetate and treatment with Ca EDTA.

lead content of the kidney cortex, liver, and rumen contents was determined. All lead determinations were made according to the dithizone method as described by the Association of Official Agricultural Chemists.

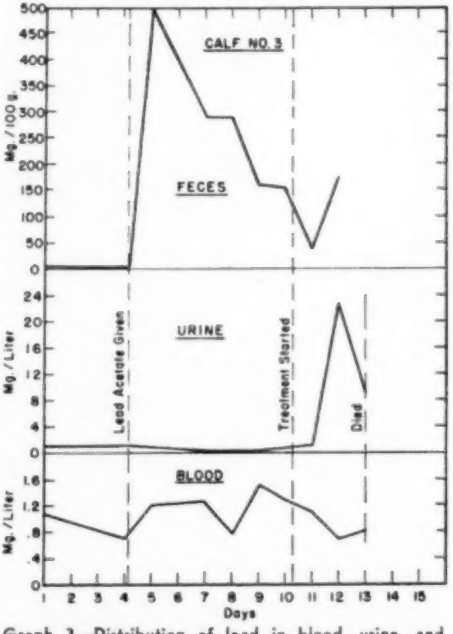
RESULTS

Of the 7 animals poisoned and treated, 4 survived. Marked clinical improvement was noted soon after treatment was initiated. Extreme nervous signs were not seen after twenty-four hours, but dullness persisted for three days. The animals began to eat on the second to fourth day after treatment was started and feces became firm after a few days on normal rations. Blindness was common to all animals at the time of first treatment. Vision began to return four or five days after treatment and within a week vision was normal. Animal 2 recovered after a single course of treatment. Despite apparent recovery after a single course of Ca EDTA, animals 4, 6, and 7 were given a second course after a nine-day lapse to determine the extent of lead excretion.

Three animals died during the experiment. Calf 5 died before any treatment could be instituted. No lead distribution data are presented from this animal. Calf 3 died exhibiting typical signs of lead poisoning three days after the end of the first treatment period. Calf 1, having made an apparent recovery, literally fell dead on the thirteenth day after poisoning as she was being prepared for a second series of Ca EDTA injections. There were no premonitory signs and the animal was in excellent condition. Autopsy data gave no clue to the death although a thrombus was sus-



Graph 2—Distribution of lead in blood, urine, and feces of calf 2 during the course of poisoning with lead acetate and treatment with Ca EDTA.



Graph 3—Distribution of lead in blood, urine, and feces of calf 3 during the course of poisoning with lead acetate and treatment with Ca EDTA.

pected. Examination of lead distribution curves for this animal revealed an elevated lead level in the blood at the time of death, but the level was far less than that seen in animals 6 and 7 on the fifteenth and twenty-fifth days.

The lead content of autopsy material of animals 1, 3, and 5 is presented in table 2. In addition, the lead assay of animal 2 is included. The latter animal made a complete recovery as a result of Ca EDTA therapy, but she was killed forty-one days after treatment in order to determine residual lead in the tissues.

TABLE 2—Lead Content of Calf Tissues at Autopsy Expressed as Milligrams of Lead per 100 Gm.

Animal	Kidney cortex	Liver	Rumen contents	
			Wet wt.	Dry wt.
1	0.29	0.44	5.5	40.0
2	0.39	0.34	.....	.....
3	6.88	4.10	76.0	380.0
5	4.05	1.65	26.0	127.0

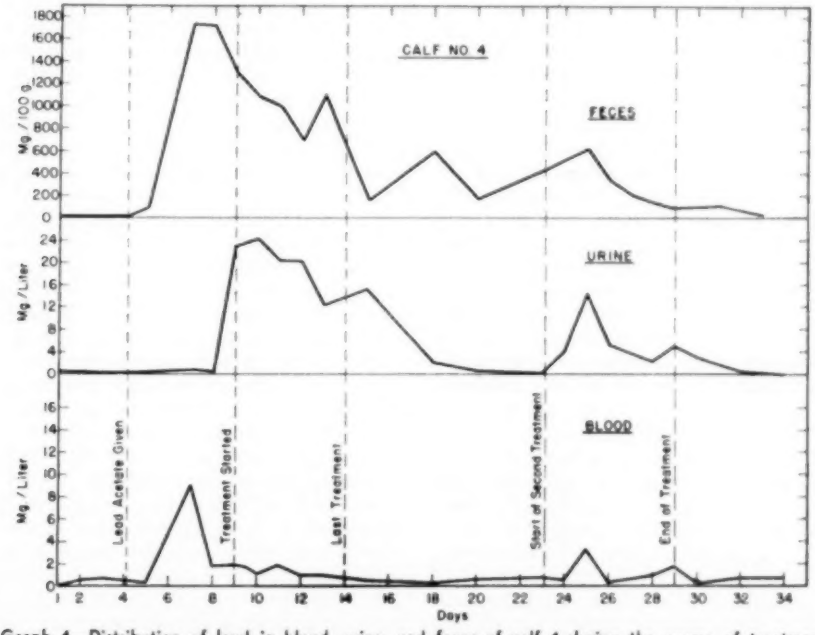
The difference in the lead level of the rumen contents between animals 3 and 5 is attributed here to the use of $MgSO_4$ in animal 5, which presumably caused purgation and the lowering of the rumen reservoir.

Examination of the distribution curves revealed a marked variation in the time of appearance of lead in the feces after poisoning and marked variation in peaks of fecal excretion. These are considered to be normal variations. In animal 2, a second fecal peak after treatment coincided with a urinary peak. This fecal peak is attributed to biliary excretion of Pb EDTA. Similar, but less marked, correlation was seen in animal 1 where the fecal level paralleled the urine level between days 12 and 14. Biliary excretion was probably the cause of the gradual increase of fecal lead between days 20 and 25 in the case of animal 4.

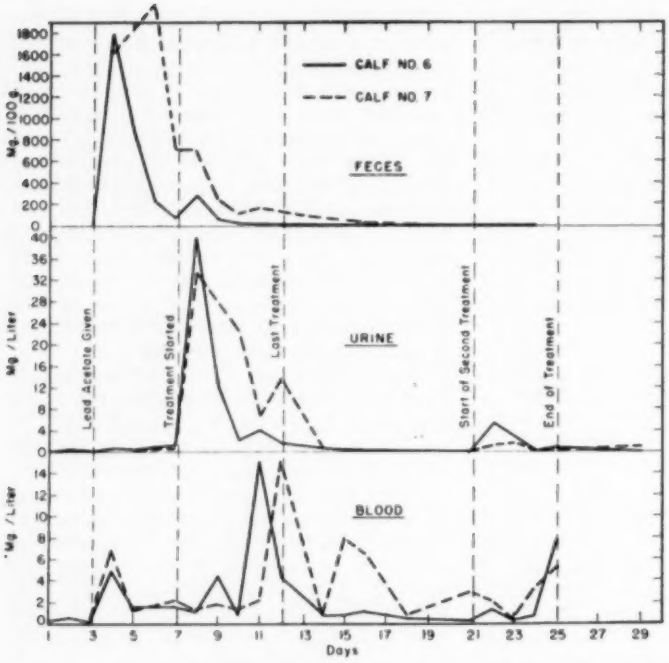
The extreme lag in the appearance of Pb EDTA in the urine of animal 2 is unexplained. In animal 4, urine Pb EDTA was at a peak level at the time therapy was started. This, too, is unexplained.

In the case of animal 4, the second course of treatment raised the urinary output of Pb EDTA significantly, but the increase in excretion in animals 6 and 7 was not marked. This would indicate more complete complexing of the tissue lead with Ca EDTA during the course of the first treatment of animals 6 and 7.

Except for animal 1, all calves received



Graph 4—Distribution of lead in blood, urine, and feces of calf 4 during the course of treatment with lead acetate and treatment with Ca EDTA.



Graph 5—Distribution of lead in blood, urine, and feces of calves 6 and 7 during the course of poisoning with lead acetate and treatment with Ca EDTA.

Ca EDTA by the subcutaneous route. This method of administration was tried because of its applicability to field conditions and because we had found no untoward effects when Ca EDTA was inadvertently administered to a horse via the subcutaneous route.[7] No significant side-effects were noted when the agent was injected subcutaneously. Extensive studies have demonstrated that Ca EDTA is inocuous when applied to mucosal surfaces and in subcutaneous tissues.[10] In animals 6 and 7, the drug was injected undiluted, *i.e.*, as a 25 per cent solution and some short-lived local pain was produced in these animals. However, undiluted Ca EDTA would rarely be used in clinical lead poisoning because of the necessity for administration of large quantities of fluids to the dehydrated patients.

DISCUSSION

The main problem of management of acute lead intoxication has been the lack of one specific agent which has a high affinity for tissue-bound lead and which is nontoxic, nonionizable, and not metabolized by the tissues. Another problem related to past procedures for rapid deleading has been the occurrence of kidney damage resulting from the urinary excretion of lead in a loosely bound form or as the free ion. These problems seem to be resolved to a large extent through the use of Ca EDTA. It is to be emphasized that Ca EDTA does not complex with lead from the bony depots to any great extent. Its main effect is in the soft tissues. Data are not at hand, but it is conceivable that early treatment of acute lead poisoning with Ca EDTA would draw so heavily from the soft tissues that little bony deposition would occur.

No attempt has been made here to set up a treatment schedule. Our dosages varied with the size of the animal and with the degree and duration of nervous signs. The initial dosage of Ca EDTA in most cases, however, approximated a total of 1 Gm./30 lb. of body weight for the first twenty-four hours. Although divided doses were administered during the first few days of treatment, no data are available to compare results obtained by this regimen with that using a single dose per day.

As with all therapeutic procedures, the time element is of extreme importance. In allowing the experimental animals to attain a state of blindness, convulsions, and other severe nervous dysfunction, an attempt was made to reproduce conditions as they might be encountered in the field. It was deemed

advisable to test the therapeutic effectiveness of Ca EDTA under conditions as extreme as was consonant with obtaining sound experimental data. Although the number of animals was not large, the recovery of 4 of the 7 calves is considered to be of significance. It is believed that Ca EDTA warrants trial in actual field cases of acute lead poisoning of cattle.

SUMMARY

Seven calves were poisoned with orally administered lead acetate and were treated with Ca EDTA subcutaneously when they exhibited severe distress of central nervous origin. Four calves made remarkable recovery. Urinary- and fecal-lead levels indicated that Ca EDTA promoted rapid urinary excretion and enhanced biliary excretion of lead complexed as Pb EDTA.

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An Evaluation of Medicaments for Removing Fringed Tapeworms from the Livers of Sheep

(An Abstract)

O. WILFORD OLSEN, Ph.D.

Fort Collins, Colorado

Copper sulfate, copper sulfate-nicotine sulfate, carbon tetrachloride, tetrachlorethylene, hexachlorethane, lead arsenate, phenothiazine, n-butyl chloride, sulfaquinoxaline, quaternary antimony compound, and bis (5-chloro-2-hydroxyphenol) methane (teniatol) have been tested by various investigators for removing fringed tapeworms from the livers of sheep. Of these substances, only teniatol showed thysanosomicidal properties.

In view of the claims made by Ryff, Browne, Stoddard, and Honess (*J.A.V.M.A., 117*, 1950: 471-473) on the efficacy of teniatol in removing fringed tapeworms from the livers of sheep, trials were made on feedlot lambs to check their results. Accordingly, 351 lambs were medicated with 1 oz. and 109 with 2 oz. of the medicament, making a total of 460 animals treated. The controls originated from the same flocks and were kept with the medicated lambs in the feedlot. Of the 460 medicated lambs, 39 (8.5%) of the livers were condemned at slaughter as against 99 (20.5%) of the 484 controls. The action of the drug in removing the tapeworms was highly erratic and unpredictable.

Calculating the number of infected livers on the basis of 20.5 per cent infection of our 944 sheep, with 16.8 per cent infection of 4,851, and 24.1 per cent infection of 683 sheep as determined by Ryff *et al.*, would make a total of 1,174 of the 6,478 sheep considered in these studies which should have been infected with fringed tapeworms prior to medication. If all of the infected livers valued at 40 cents each, according to Ryff *et al.*, could have been salvaged they would have brought $469.60. The current cost of the 52 gallons of teniatol that would have been required to medicate this many lambs is $491.40. Thus, it would cost $21.80 more for the medicament than the total

From the Pathology Section of the Experiment Station, Colorado A. & M. College, Fort Collins.

The original article appeared in the American Journal of Veterinary Research (Oct., 1953: 616-620).

value of all the infected livers. This does not include freight on the drug, labor in administering it, and possible losses accruing from fasting and handling the sheep. Medication of sheep with present day thysanosomicides can not be justified on an economic basis in view of the fact that fringed tapeworms produce no detectable pathology.

Tetanus of Intestinal Origin in Man

An emergency laparotomy on a woman revealed a gangrenous portion of the terminal ileum. This portion was quickly excised but, because of her critical condition, instead of an anastomosis the free ends of the intestines were brought through the abdominal wall, which was then closed. For five days she progressed satisfactorily, then she complained of a stiffness of her jaw and became restless and worried. Sedatives gave relief but the symptoms increased and in sixteen hours death occurred.

Clostridium tetani were cultured from superficial parts of the abdominal wound. This serves as a reminder that the organism is present in the bowel. The normal bowel wall forms a barrier to its passage but when the bowel vitality is impaired, penetration of the organism can occur. Forty-seven such cases were recorded in world literature by 1948. Therefore, in case of a damaged bowel, tetanus antitoxin should be administered.—*Brit. M. J., Feb. 28, 1953.*

Edema Disease in Swine

The summary of a paper on edema in pigs presented at the Norwegian Veterinary Medical Association, Aug. 31, 1951, states that the disease was observed in Norway from the first years of World War II but had not been recognized in Sweden and Denmark. The usual symptoms were edema of the eyelids and bowels, paralysis, and death within five to twenty-four hours. For two years, good results had been obtained by treating the unaffected pigs in affected litters with a subcutaneous injection of 75 mg. of vitamin B_1 (aneurin hydrochloride) plus 3 Gm. of phthalylsulfathiazole twice a day in the food of pigs for two or three days. Only exceptionally did the outbreak not stop at once. If more pigs sickened they were given 6 to 10 Gm. of phthalylsulfathiazole followed by 3 Gm. twice a day; nearly all recovered. The suspected cause is an unknown virus or bacteria which produces toxins that destroy the B vitamin in the digestive organs.—*Vet. Rec., March 1, 1952.*

Losses from Dipping Sheep

The *Journal of the Department of Agriculture of South Australia* (July, 1953, p. 540) advises three precautions be taken in dipping sheep: (1) Dip animals with short wool; (2) follow implicitly the printed instructions; (3) dip thoroughly, carefully, and cleanly.

Arsenical dips cause trouble in two ways —thirsty sheep may drink from the vat or arsenic may be absorbed through the skin. The latter occurs chiefly when animals with long wool are dipped, or if humidity or late-in-the-day dipping prevents quick drying. *Erysipelothrix rhusiopathiae* infection is common if benzenehexachloride dip is used for more than one or two days. The erysipelas organism will not grow in arsenical dip but grows readily in some BHC dips when contaminated with decayed matter. This can be prevented by making maximum use of the dip for one day, then discarding it. Adding copper sulfate will make it safe for two or three days. Infection of the limbs causes lameness and sometimes many deaths.

Listeriosis in the Chinchilla

Listeria monocytogenes has been isolated on three occasions from chinchillas in Canada, in Virginia, and in Iowa. Signs of the disease are sneezing, conjunctivitis, nervousness, twitching face and ears, slobbering, holding the head to one side and pawing at an ear. Death often comes unexpectedly. Necropsy may reveal hemorrhages of the heart and lungs, congestion of the stomach and intestine, enlarged spleen, and grayish white lesions of the liver. Infection may originate from hay contaminated by rats or by grazing sheep. Since man is susceptible, all sick chinchillas should be handled with care, preferably by wearing gloves. Recovered animals may be carriers. Sick animals should be immediately isolated.—*H. C. Smith, D.V.M.*, in *Am. Fur Breed., Oct., 1953.*

Canine Nocardiosis—A Report of Two Cases

R. F. CROSS, D.V.M., M.Sc.; W. T. NAGAO, D.V.M.; R. H. MORRISON, D.V.M.

Honolulu, Hawaii

The recent report by Bohl *et al.*[1] on nocardiosis recorded the first canine case in American literature. The purpose of this report is to record two additional cases that were found associated with other diseases. These cases originated from widely separated areas.

CASE REPORTS

Case 1.—A 3-year-old female Cocker Spaniel from the Kona district of the Island of Hawaii became ill during an outbreak of distemper. It was 1 of 12 animals from the same locality affected with the same disease syndrome. Morbidity in the area was approximately 75 per cent.

The signs observed on initial clinical examination of this patient were pyrexia, anorexia, diarrhea, weakness, emaciation, conjunctivitis, rhinitis, tonsillitis, cough, and expiratory dyspnea. A tentative diagnosis of canine distemper was made and treatment was instituted. The animal died eight days later.

A necropsy was performed and lesions consistent with the tentative diagnosis were found. The single unusual finding was an enlarged, abscessed, and granulomatous bronchial node. Tissue specimens were collected and sent to the veterinary laboratory in Honolulu for further study.

Gram-stained smears from the abscessed bronchial node contained numerous gram-positive branching filaments. These filaments often had a beaded appearance. Small coccoid and bacillary elements were present. These organisms irregularly retained the acid-fast stain. Some filaments were acid-fast while others of apparently identical morphology were not acid-fast. Staining of several slides produced the same results and since both acid-fast and nonacid-fast elements were intermingled in the same area, it was felt that this was a true characteristic of the organism and not a result of faulty staining technique.

Inoculation of blood and Sabouraud's glucose agar yielded pure cultures of the organisms. The blood agar was incubated at 37 C. and pinpoint colonies were present within twenty-four hours. The Sabouraud's agar was incubated at room temperature and colonies were found within four days. Continued incubation for six weeks revealed no other organisms. These organisms were identified as *Nocardia asteroides* by the procedures listed in Bergey's manual.[2] Subcultures were studied at the laboratory of the Territorial Board of Health and the same identification was made.

Sections for histopathological study were unsatisfactory due to autolysis of the specimens.

In view of the history, symptoms, and lesions, it is believed that the primary cause of death was canine distemper. *Nocardia asteroides* was considered a concurrent infection.

Case 2.—A young, mixed Terrier male was ill on arrival at the animal quarantine station in Honolulu. The dog had been examined before shipment from Maryland and was accompanied by a veterinary health certificate.

Initial examination revealed signs comparable to those observed in case 1 and a diagnosis of canine distemper was made. After three days in quarantine, the animal was released to a local veterinary hospital. During the period of hospitalization, it developed the hard pad syndrome with convulsive seizures. It died eight days after arrival in the territory.

At necropsy, the right bronchial lymph node was enlarged and granulomatous. It measured 3 cm. in length by 2.5 cm. in width. A portion of the lung immediately adjacent to the node was light grey and firm. A thick purulent exudate oozed from the cut surface. Numerous gram-positive, partially acid-fast branching filaments were present in the exudate from the lung and affected node. Other lesions found were those of the hard pad syndrome of canine distemper. Eosinophilic cytoplasmic inclusions were present in cells of the mucosa of the urinary bladder. *Nocardia asteroides* was isolated from the affected portion of the lung and the right bronchial node.

Sections of these tissues showed purulent granulomatous inflammation. Multiple necrotic foci filled with neutrophils and monocytes were surrounded by zones of fibroblasts and capillaries. Multinucleated giant

From the Board of Commissioners of Agriculture and Forestry, Honolulu, Hawaii.

cells of the Langhan type were occasionally seen. In Gram-stained sections, the hyphae were prominent and occurred chiefly within the cytoplasm of the monocytes and giant cells. Extracellular hyphae were only occasionally seen.

Canine distemper was considered to be the primary cause of death.

SUMMARY

1) Two cases of canine nocardiosis are described.

2) *Nocardia asteroides* was isolated from both cases.

3) The nocardia infection was not considered the primary cause of death in either case.

References

[1]Bohl, E. H., Jones, D. O., Farrell, R. L., Chamberlain, D. M., Cole, C. R., and Ferguson, L. C.: Nocardiosis in the Dog. J.A.V.M.A., *122*, (1953): 81-85.

[2]Breed, R. S., Murray, E. G. D., and Hitchens, A. P.: Bergey's Manual of Determinative Bacteriology. Williams and Wilkins Company, Baltimore, (1948):896-897.

Myxomatosis in Europe

The fatal virus disease, myxomatosis, which was unwisely seeded in rabbits in France a year ago had, by October, been officially diagnosed also in Belgium, Holland, and Germany. It had been believed that the hare (close kin to rabbits but with larger black-tipped ears) was refractory to myxomatosis but several cases have now been reported in France. This may mean that variants have developed in the virus during the year while it has been spreading among wild and domestic rabbits.—*Circulaire 81. Office International des Epizoöties, Paris.*

More About Myxomatosis in Rabbits

Australian journals report that this South American virus disease, which was used to destroy wild rabbits in Australia, makes its most effective kills along river valleys in the summer and fall but dies down during the winter to flare up the next spring. It does not spread satisfactorily more than 1,000 feet above sea level. Mosquitoes appear to be the chief vector but fleas and lice can transmit the disease. Morphologically and biologically, the virus is very similar to the pox virus. Apparently a single virus particle will initiate infection which progresses from the site of inoculation to the regional lymph node, then to the blood stream, finally causing death. Surviving rabbits are usually immune.—*Vet. Bull., Sept., 1953.*

An Experiment in Milking Sows

At a research station in Hamilton, New Zealand, a milking machine with 12 tiny teat cups has been devised for milking sows. When a sow is placed in an elevated milking stand and the machine applied, usually no milk can be drawn. One unit of milk let-down hormone is then injected into an ear vein and in fifteen seconds the mammary glands become turgid and milk flows freely for about a minute; after a five minute rest, this can be repeated. The reaction is singularly quantitative; if one-half unit of hormone is injected, milk will flow for about half a minute or if one-fourth unit is used, it is effective for about fifteen seconds.—*Hoard's Dairyman, Aug. 25, 1953.*

Ringworm of Cattle and Man

In 1951, a cow was marketed because of a drop in milk, loss of hair and weight. Another cow was purchased and placed in the same stanchion. Weeks later, this cow showed marked skin irritation and a drop in milk and weight. She developed many extensive, gray, crusty skin lesions, especially on the flank, neck, back, and legs. *Trichophyton discoides* was demonstrated. The same infection was demonstrated on other cattle and on three persons who worked with them.—*Canad. J. Comp. Med., June, 1953.*

Action of Antibiotics on Virus

Known antibiotics act only on the largest viruses, rickettsias, and pleuropneumonia-like organisms. Search for a viricidal substance by Waksman, *et al.*, produced ehrlichin which is inactive against bacteria but active *in vitro* on Newcastle disease virus and influenza A and B virus. However, *in vivo*, it is active only against the influenza B virus. It is suggested that a better understanding of virus multiplication is necessary before a satisfactory viricidal agent is found.—*Vet. Bull., Sept., 1953.*

Improving Johnin by Fractionation

Johne's disease which causes an annual loss in cattle of approximately one half million dollars is on the increase. The johnin available for intradermal testing is simply a concentrated filtrate of Johne's bacilli culture and is not very satisfactory. Attempts to improve it by fractionation, as has been done with tuberculin, are in progress. Several proteins, each with a certain potency, present in johnin are broken down and isolated, then tested. When appraised on nitrogen content, the resulting fraction contained only 2½ per cent of that in the original culture filtrate. It proved to be more specific than the regular BAI johnin. —*Am. Rev. Tuberc., Sept., 1953.*

Leptospirosis of Goats in Israel.—An outbreak of leptospirosis in goats in a village caused a 44 per cent mortality in one group, although other infected animals showed few or no symptoms. *Leptospira grippotyphosa* was isolated from the goats. Sheep, cattle, and other local species showed an increase in agglutinins.—*Vet. Bull., Sept., 1953.*

Tick Transmission of Leptospira.—*Leptospira icterohaemorrhagiae* was transmitted from artificially infected guinea pigs by *Ornithodoros moubata*. The organisms lived in the tick thirty-nine days and were also found in its eggs.—*Vet. Bull., Sept., 1953.*

A chinchilla auction sale next spring will be held by the National Chinchilla Breeders of America in New York City. The fur industry will experiment with chinchilla skins to develop a new technique for manipulating the delicate silklike fur.—*Am. Fur Breed., Oct., 1953.*

French Moult in Budgerigars

Dr. F. W. Schofield, Ontario Veterinary College, reports that attempts to determine the cause of French moult in budgerigars have not yet met with success. There are many indications that it may be a deficiency and it might be an infection, but mites were positively ruled out. The feathers are usually shorter than normal, the tip of the quill is pointed and rubbery, or is broken, and the shaft usually contains blood. Attempts to prepare a diet which would produce French moult failed, either rickets or infertility intervening. No difference in the bacterial flora of the crop could be detected. Crowding birds to increase their rate of reproduction could be a factor.—*All Pets Mag., Sept., 1953.*

Parasites and Built-Up Litter

Three experiments covering a year indicate that parasite ova and oöcysts are not destroyed in built-up litter. Some birds were heavily infested with *Ascaridia galli, Heterakis gallinae* and *Capillaria retusa*. Many birds had from 100 to 190 ascarids while half, in the same pen, had less than 10 ascarids and a few had none. That oöcysts remain viable in the built-up litter was indicated by the presence of *Eimeria acervulina, Eimeria maxima,* and *Eimeria tenella* in these birds. The problem is much more serious when old parasitized hens have been on the litter.—*Poult. Sci., March, 1953.*

Setting Standards for Syringes.—The Second General Conference on Hypodermic Syringes and Needles was held at the headquarters of the American Standards Association in New York on Sept. 10, 1953. The Red Cross had requested that standards be set. It was indicated that the interchangeability of syringe tips and needle hubs was feasible but that standardization of barrels and plungers probably was not.

Lead Arsenate with Phenothiazine

For the removal of tapeworms in sheep and goats, there was little therapeutic difference between lead arsenate mixed with phenothiazine and lead arsenate alone. The lethal dose is 5 to 7 Gm. of lead arsenate but recommended therapeutic doses were not toxic except for the debilitated. Treatment in advanced pregnancy caused no ill effects.—*Vet. Bull., Sept., 1953.*

Bowel edema (edema disease) of pigs occurs throughout Great Britain but no common etiological factor has been established. It occurs under all conditions of management and feeding. It has been reproduced by inoculating pigs with intestinal content from typical cases.—*Vet. Rec., Sept. 5, 1953.*

NUTRITION

Twins Reveal Nutrition Secrets

The U.S.D.A. experiment station at Beltsville, Md., using identical twin calves, has demonstrated that keeping an animal on short rations for an extended period does not seriously interfere with its final development. When the experiment began, each twin weighed 330 lb. One twin, kept on short rations, weighed only 340 lb. six months later, while his well-fed brother weighed 618 lb. Both were then put on the same liberal ration. In another seven months the heavier twin had reached 1,000 lb. while the retarded twin weighed 830 lb., but it required only seventy-four more days to also reach 1,000 lb. Most revealing was that each twin, when it reached 1,000 lb. had required about the same total amount of feed.—*U.S.D.A.*

Vitamin B_{12} Requirement of Dairy Calves

Twenty-three newborn dairy calves in five experimental groups were fed "alpha" (protein synthetic milk) which is deficient in vitamin B_{12}. Groups on B_{12} deficient diets developed a lack of appetite, poor condition, muscular weakness, and white-spotted kidneys. The vitamin B_{12} requirement was between 20 γ and 40 γ per kilogram of dry matter.—*J. Dai. Sci., Sept., 1953.*

Arsonic Compounds in Nutrition

Three arsonic compounds are being used as growth stimulants for poultry. These are arsanilic acid, sodium arsanilate and what is called 3-nitro; a fourth compound is used for controlling blackhead in turkeys. As with antibiotics, the growth responses vary and their mode of action is, perhaps, by modifying the intestinal bacteria. They are poisonous when fed in excessive quantities, the margin of safety for 3-nitro being quite narrow. There is some evidence that these arsonic compounds may aggravate "hemorrhagic disease" in broilers. Turkeys may have less tolerance than chickens.

Swine show similar growth responses to arsonic compounds but their tolerance is considerably narrower. These drugs also have value in the treatment of swine dysentery; 3-nitro being used at the rate of 400 mg. per gallon of drinking water for four or five days. They may be used in combination with antibiotics.—*Feed Research Facts, Sept. 10, 1953.*

Fright Disease in Dogs and Allergy in Man

A 37-year-old woman exhibited eczema, mental disturbance, and anorexia intermittently for five years. When it became evident that symptoms increased on contact with flour, a flour-free diet brought continuous improvement. Experimental dieting indicated that bread made from flour treated with agene or with chlorene dioxide brought a rapid reappearance of the skin disorder. It is recalled that agene-treated flour was also responsible for a nervous disease in dogs (fright disease). The question is asked if an acceptable bread can not be made without exposing flour to chemicals.—*Vet. Rec., Aug. 22, 1953.*

Vitamin B_{12} in Milk of Pastured Cows.—When cows were placed on pasture, the vitamin B_{12} content of their milk almost doubled during the first week. Their daily production, measured in micrograms per liter, was 6.31 μg. per liter indoors and 11.10 μg. when at pasture.—*AFMA Nutr. Abstr., July, 1953.*

Cobalt Salt in Lamb Rations

In three lamb-feeding trials at Brookings, S. Dak. (using local feeds), no benefit resulted from the addition of up to 1 oz. of cobalt chloride per 100 lb. of salt (S. Dak. Agric. Exper. Sta. *Bull. 425*).

However, in three trials at the Newell Field Station, 1 oz. of cobalt chloride per 100 lb. of salt saved an average of 79 lb. of grain and 156 lb. of prairie hay per 100 lb. of gain. Chemical analysis of 1951-1952 alfalfa and prairie hay showed a 0.1 p.p.m., cobalt, whereas the minimum requirement is only 0.07 p.p.m. But when barley, which

contains 0.03 p.p.m., is fed in equal parts with hay the cobalt content is below minimum requirement.

A Protein Factor for Lactation

A purified soybean protein preparation was found which, when fed to rats, produced a mortality as high as 90 per cent in litters of the second generation. Mortalities were not reduced by supplementing this ration with folacin, citrovorum factor, orotic acid, or any of the recognized vitamins. Substitution of a vitamin-free casein reduced the death rate to about 35 per cent, and a crude animal protein reduced it to 7 per cent. The agent responsible for the benefit conceivably represents a new principle closely associated with certain animal proteins.—*Nutr. Rev., Sept., 1953.*

Chemical Improvers of Flour

The use of agene (nitrogen trichloride) to improve flour was found to produce an antimetabolite of methionine which produced toxic manifestations in dogs, rabbits, and cats. Agene is used to artificially age and bleach the flour. Because of its toxicity, a search was made for substitutes. Ammonium persulfate, widely used in Europe, apparently lacks toxicity. In the United States, chlorine dioxide is more commonly used. The changes which it induces do not harm the nutrient quality, but it does cause the loss of 70 per cent of the tocopherol (vitamin E) in flour.—*Nutr. Rev., July, 1953.*

Less Vitamin B_{12} in Goat's Milk.—Goat's milk was found to contain 0.15 μg. of vitamin B_{12} per liter while cow's milk contains 3 to 4 μg. per liter. The inferior growth of rats fed on a mineralized goat's milk was found to be due to deficiency of vitamin B_{12}.—*Nutr. Rev., Oct., 1953.*

Effect of Detergent on Chick Growth.—When various detergents and germicides were added at different levels to a chick basal diet, they produced either no significant growth response or, at high levels, actually depressed growth. In each trial the group fed either procaine or diamine penicillin as a supplement made a significant growth response.—*Poult. Sci., Jan., 1953.*

Environment versus Antibiotics

The growth rate of baby chicks in new quarters without antibiotics was greater than in old quarters with antibiotics. A temporary slump in growth rate occurred when, at 4 weeks of age, chicks without antibiotics were moved from new to old quarters. No such slump occurred when antibiotics were withdrawn from the chicks in the old quarters. Feed was used with equal efficiency by chicks in new quarters without antibiotics and in old quarters with antibiotics. In both, it was more efficient than for chicks in old environment without antibiotics. The results support the theory of a bacterial enterotoxemia. They also suggest that antibiotics are beneficial because they partially protect the chick while it is becoming adjusted to the microbiological environment.—*Poult. Sci., May, 1953.*

Antibiotics and Duck Growth.—Feeding chlortetracyline (aureomycin), penicillin, terramycin,® and streptomycin at recommended levels had no affect upon feeding efficiency or growth of young ducks. They did produce various modifications in the cecal microflora.—*Poult. Sci., March, 1953.*

Implanting Antibiotics in Baby Pigs.—Research at the University of Illinois indicates that the subcutaneous implantation of penicillin, chlortetracycline (aureomycin), or bacitracin pellets was not effective in increasing either the survival rate or the gain in 579 baby pigs. When weaned, the weight was 31.4 lb. for the controls and 30.9 lb. for those which had received antibiotic implants.—*AFMA Nutr. Abstr., July, 1953.*

Commercial Algae Foods Predicted.—Research indicates that algae can be cultured in sewage oxidation lagoons more economically than on synthetic mediums. The algae give off oxygen needed by the bacteria and, in turn, get carbon dioxide, nitrogen, and minerals from the decomposing material. The algae product is about 50 per cent protein and 30 to 35 per cent fat. A satisfactory method of harvesting the algae is needed.—*J. Agric. Food Chem., Sept. 30, 1953.*

EDITORIAL

Chlorophyll Facts and Fantasies

Imagination is a wonderful thing; in youngsters it provides valuable mental exercise, in the entertainment world it is laudable; even in science it has its place in stimulating as well as guiding research. Yet science above all things is based on facts, and facts can neither be fancied nor compromised. And responsible adults should attempt to distinguish facts from fantasies.

It is a fact that chlorophyll is green, the Greek word *chloros* meaning green, yet all things green are not chlorophyll. It is also a fact that, as it occurs in plants, chlorophyll is one of nature's outstanding wonders but can it continue its activities in an unnatural environment, such as when displaced in an animal?

Mere man has usually been amazed and often confused by the discoveries of science but seldom has he been so confused as by the big green, supposedly scientific, but strangely commercial, bubble that expanded in our (America's) midst in recent years. In the ensuing din, the voice of science was drowned by the clamor of the pseudo-scientist and the advertising genius. However, after a prolonged ride on the magic green bubble, fantasy seems to be fading and the voice of science again is being heard. The JOURNAL, having watched from the sidelines, and having rejected articles both pro and con, now presents a few scientific opinions.

As early as May, 1951, the *Journal of the American Medical Association*[1] warned that "conclusive evidence is lacking that chlorophyll derivatives stimulate granulation or epithelialization beyond the normal rate of healing."

Claims for chlorophyll had challenged one of the fundamental principles of surgery, namely, that healing is best promoted by preventing the introduction of *any* foreign substance. (In a similar way antibiotics had challenged another fundamental belief, namely, that only assimilable nutritive materials could affect animal growth. However, now it appears that antibiotics merely repress the agents which prevent optimal growth.)

Again in September, 1951, the *Journal of the A.M.A.*[2] stated: "Chlorophyll derivatives will deodorize foul-smelling wounds . . . not . . . due to the destruction of bacteria . . . [but] . . . probably due to absorption or possibly oxidation or reduction of the odorous substance." It adds ". . . most body odor is due to bacterial decomposition of the sebaceous secretions on the skin . . . [and there is] . . . no evidence that chlorophyll decreases this secretion or alters the bacterial flora. . . ." It also questions whether this ". . . action exists except in the minds of the observer." This same article may have suggested the classical ditty,

> The goat that reeks on yonder hill,
> doth browse all day on chlorophyll

by saying ". . . many . . . animals, including the goat, consume large quantities . . . [yet] . . . are noted for their pungent aroma."

The Dec. 20, 1953, issue of *Science Newsletter* reported that ". . . chlorophyll derivatives taken by mouth . . . probably do not get into the blood stream in sufficient quantities to deodorize, and if they did they would be "extremely dangerous" because of photosensitization." It continues ". . . space deodorant devices . . . contain a pleasant odor . . . also contain formaldehyde to paralyze the sense of smell." It also adds that it is ". . . not certain that it [chlorophyll] has any value . . ." other than furnishing "scientists with good clean fun."

Others point out that chlorophyll is not volatile. If so, how could it affect odors in a room and, if not absorbed, how could it affect body odors other than in the alimentary tract?

[1]The Council on Pharmacy and Chemistry (New and Non-Official Remedies): J. Am. M.A., *146*, (May, 1951):34.

[2]Queries and Minor Notes: J. Am. M. A., *147*, (Sept. 1, 1951):99.

[3]Brocklehurst, J. C.: Assessment of Chlorophyll as a Deodorant. Brit. M. J., (March 7, 1953):541-544.

In March, 1953, Brocklehurst[3] reported a series of convincing experiments, both *in vitro* and *in vivo*. He found that four different commercial chlorophyll preparations, *in vitro*, failed to neutralize or reduce "methylmercaptan gas," an ingredient of typical body odors. His *in vivo* tests were made on a bed patient with incontinence of urine and feces and also with the urine odor resulting from men eating asparagus. Massive doses of the chlorophyll preparations failed to perceptably reduce any of these odors.

In September, 1952, *The Veterinary Record*[4] reported ". . . a demonstrable improvement in breath odor" of 6 dogs, for four to six hours after being given a chlorophyll pill, but 3 of 4 observers reported "no detectable improvement" in body odor. Also it had no effect in keeping strange male dogs from ". . . endeavoring to enter the . . . living quarters . . ." of 3 proestrous bitches, nor did it keep inmate males from attempting to mate for as long as fourteen days after the onset of estrus.

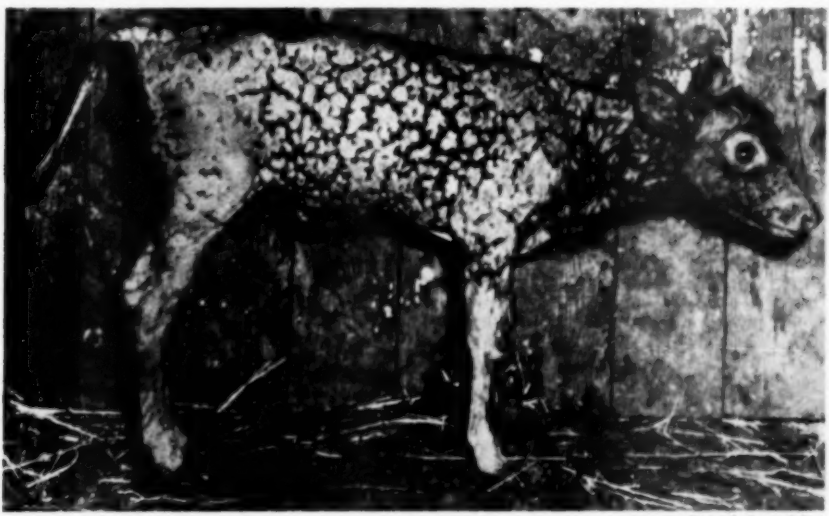
Thus the multimillion dollar bonanza is being debunked. It has been estimated that, in 1952, $20 million was spent on propaganda advertising alone, that 60 tons of chlorophyll powder was produced, and that it was used in at least 150 commercial products. Some manufacturers of dog foods, and other chlorophyll-containing products, now admit that they were forced by competition to add it to their products but, not knowing its possible effects, they added very little. The bursting of the green bubble should bring a sense of relief to many; to others it should at least bring a change of color, perhaps a *ruber facies*.

[3]Worden, A. N., and Waterhouse, C. E.: Note on the Oral Administration of Chlorophyll to Dogs. Vet. Rec., (Sept. 27, 1952):64, 39, 573.

"Mistakes I Have Made"

A prize letter published in the *Progressive Farmer* (Oct., 1953) reads as follows:

> When one of my best Hereford cows died with anthrax, I skinned her and left the carcass for the hogs to eat. As a result I contracted the disease and was in the hospital for more than a week. Five of my hogs died from eating the diseased carcass. Three more cattle had to be destroyed because of the disease. All animals on my farm were quarantined and I could neither sell nor ship any of them. The next time an animal gets sick on my farm, I shall call a veterinarian immediately.



—*United Press Photo*

This 4-week-old female, born to a Shorthorn heifer on a farm near Mankato, Kan., is marked like a fawn and has deer-shaped hoofs. The farmer who owns it says he has often seen a buck deer drinking with his cattle. Could it be a hybrid?

CURRENT LITERATURE

ABSTRACTS

Essentiality of the Bovine Corpus Luteum of Pregnancy

The necessity of the corpus luteum for the maintenance of pregnancy in the cow was studied by surgical ablation at different stages of pregnancy. Pregnancy in 10 cows terminated following surgical removal of the corpus luteum between days ninety-two and 236 of pregnancy. Corpus luteum removal from 3 cows on days 207, 224, and 230 was followed by pregnancy maintenance fifty, twenty-four, and eighteen days thereafter, respectively, when transferred to another experiment. It appears that the corpus luteum is necessary to maintain pregnancy until approximately the 200th day of pregnancy, thereafter an individual variation exists.—[*Leslie E. McDonald, S. H. McNutt, and R. E. Nichols: On the Essentiality of the Bovine Corpus Luteum of Pregnancy. Am. J. Vet. Res., 14, (Oct., 1953):539-541.*]

Isolation Units for Growing Baby Pigs Without Colostrum

The apparatus for isolation of baby pigs from birth to 4 weeks is described. Pigs secured asceptically by hysterectomy may be successfully raised without colostrum on a diet of cow's milk fortified with egg yolk and minerals. The apparatus may be used for normal pigs or for those in experiments using infectious viral or bacterial materials. Uses of the apparatus for disease, nutritional, genetic, and disease control experiments are discussed.—[*George A. Young and Norman R. Underdahl: Isolation Units for Growing Baby Pigs Without Colostrum. Am. J. Vet. Res., 14, (Oct., 1953):571-574.*]

Multiple Schwannomas of Cattle

Twenty-five cases of multiple schwannomas in cattle were examined grossly and histologically. It has been established by other investigators that this tumor is derived from nerve sheath cells (Schwann's cells). The heart, mediastinum, brachial plexus, and intercostal nerves were the most common anatomic sites of the tumor which was found characteristically adjacent to, or incorporated in, one or more nerves, ganglia, or plexuses. When they were encountered as tortuous proliferations inside of nerve sheaths, they were designated as plexiform schwannomas. Definite origin from nerve fibers could not be demonstrated in the heart tumors or in many of those in the mediastinum. The Schwann's cell tumor is usually benign. In only 1 animal were definite metastases demonstrated. It is necessary to consider a multicentric development of the neoplasm to explain the multiple growths found in scattered anatomic locations or at intervals along an individual nerve in many of the other animals. Most of the affected cattle were slaughtered at abattoirs under the supervision of the Federal Meat Inspection Service and were mature animals varying in age from 2 to 10 years. A similar case in which multiple growths involved the intercostal nerves of a pig is described also in this article.—[*A. W. Monlux and C. L. Davis: Multiple Schwannomas of Cattle (Nerve Sheath Tumors; Multiple Neurilemmomas; Neurofibromatosis). Am. J. Vet. Res., 14, (Oct., 1953): 499-509.*]

Effects of Aureomycin and Other Compounds on Horse Strongyle Larvae

Of 14 compounds tested, 0.00209 M. (0.1%) aureomycin, 0.00307 M. (0.1%) hexachlorocyclopentadiene, and 0.0025 M. (0.053%) *n*-hexyl isooctyl amine prevented the development of horse strongyle eggs and/or larvae in feces. Compounds which were ineffective at a concentration of 0.01 M. were tetraisopropylpyrophosphate, tetrabutylpyrophosphate, *delta*-hexachlorocyclohexane, heptachlor, egressin, nitrophenide, nitrofurazone, pinacolone, 2-nitroresorcinol, diethyl phosphoric acid, and p,p'-dinitrostilbene.—[*Norman D. Levine: The Effects of Aureomycin and Other Compounds on Horse Strongyle Larvae. Am. J. Vet. Res., 14, (Oct., 1953): 548-549.*]

English Sparrow as a Spreader of Newcastle Disease

The transmissibility of Newcastle disease from chickens to immature sparrows (*Passer domesticus*) and from sparrows to chickens was studied. Housing of 23 immature sparrows with 20 chickens inoculated with the GB strain of virus and with 20 contact-exposure chickens resulted in the death of 13 sparrows between the eleventh and twenty-sixth days of the experiment. Three sparrows that died on the twenty-first and twenty-sixth days of the trial yielded virus from the lungs in all cases, from the liver of 1, and from the brain in another. Mature sparrows exposed to an aërosol of the virus and housed with chickens effected the appearance of the disease in the chickens six days later. Two of the 9 sparrows employed developed nervous symptoms about two days prior to death on the twelvth and nineteenth days postexposure. These birds, as well as 5 others that died during the trial and 2 that were killed, yielded virus from intestinal contents or from one or more tissues. A report is also given

of the isolation of the virus from intestinal contents of a sparrow collected from nature. These results indicate that this prevalent sparrow may be an important factor in the spread of Newcastle disease.—[*D. P. Gustafson and H. E. Moses: The English Sparrow as a Natural Carrier of Newcastle Disease Virus. Am. J. Vet. Res., 14, (Oct., 1953):* 581-585.]

Calcium, Potassium, and Magnesium in Dairy Calves

A comparison of fatal and nonfatal experiments was made with regard to the factors of total dose, blood level attained, and rate of injection. When the rate of injection was high, lower doses and blood levels were needed to produce toxicity. Delayed symptoms with one death were noted with Ca injection. There seemed to be no progressive development or regression of symptoms with Ca injections, in contrast to K, Mg, and oxalate injections. Ca appeared to antagonize somewhat the anesthetic abilities of Mg. The reciprocal effect did not seem to occur. A description of toxic symptoms was made for all substances injected. Several blood electrolyte relationships were observed and discussed.—[*E. N. Bergman and A. F. Sellers: Studies on Intravenous Administration of Calcium, Potassium, and Magnesium to Dairy Calves. I. Some Biochemical and General Toxic Effects. Am. J. Vet. Res., 14, (Oct., 1953):* 520-529.]

Action of Hypochlorite and Other Disinfectants on Micrococci

Coagulase-positive strains of *Micrococcus pyogenes* were approximately as susceptible as coagulase-negative strains to hypochlorite disinfectants. Three per cent milk in the disinfectant prevented complete killing by hypochlorites whereas smaller amounts of milk had progressively less effect. Phenol and roccal ® were affected much less than hypochlorites by the addition of milk. Sodium hypochlorite killed 71 of 78 strains in ten minutes at a concentration of 200 p.p.m.—[*Janis Lasmanis and G. R. Spencer: The Action of Hypochlorite and Other Disinfectants on Micrococci with and Without Milk. Am. J. Vet. Res., 14, (Oct., 1953):* 514-516.]

FOREIGN ABSTRACTS

Transmission of Capacity to Produce Antibodies

Rabbits were immunized by injections of either living or killed suspensions of *Salmonella typhosum*. Splenic tissue was obtained from the immunized rabbits at intervals of eighteen hours to sixteen days. Injections of intact cells into normal rabbits caused the production of high titers against *S. typhosum*. The suspension of splenic tissue was shown to be sterile. Splenic tissue lysed by the action of distilled water did not cause the production of antibodies.—[*A. Fagraeus and P. Grabar: Transmission of the Capacity of Producing Antibodies by the Injection of Splenic Tissue from Immunized Rabbits to Normal Rabbits. Ann. Inst. Pasteur, 85, (1953):*34-47.]—J.P.S.

Toxicology of Thallium

Thallium intoxication is rare, usually following the use of thallium salts for destruction of animal pests. The toxic dose of thallium sulfate is 15 to 25 mg. per kilogram of body weight for mammals, and somewhat greater for birds.—[*R. Vuillaume: Toxicology of Thallium. Rec. med. vet. (Alfort), 129, (1953):* 473-482.]—J.P.S.

Dihydrostreptomycin in Gastroenteritis in the Cat

Treatment of this feline disease should be continued for a minimum of three days. Doses of dihydrostreptomycin under 30 cg. are of little value and the practice of administering one daily dose is ineffective. At least three doses should be given daily. Parenteral administration can be substituted by oral doses of 10 cg. It is stated that oral and intramuscular use of this drug, along with supportive therapy aimed primarily at combating the severe dehydration by use of saline, dextrose, and feline plasma, is as effective as any other form of treatment.—[*M. Laurent: Studies on the Treatment of Infectious Gastroenteritis in the Cat. Rev. Med. Vet. (Toulouse), New Series 16, (July, 1953):*428.]—R.F.V.

Effect of Neomycin on Pathogenic Organisms in Intestines

Neomycin was shown to be the most effective antibiotic in reducing, preoperatively, the number of pathogenic organisms in the intestinal tract. The author states that oral use of this drug in combination with phthalylsulfathiazole assures near perfect sterilization of the gut.—[*A. Ravina: Action of Neomycin Upon Pathogenic Microbes of the Intestines. La Presse Med. (Paris), 61, (1953):* 406.]—R.F.V.

Framycetin, New Antibiotic Isolated from Streptomyces Lavendulae

The author has isolated a new antibiotic, which he named framycetin, from a strain of *Streptomyces lavendulae*. He has found it to show antibiotic activity against the following organisms: *Eberthella typhosa, Bacillus paratyphi A, Bacillus paratyphi B, Shigella equirulis, Salmonella abortivoequina, Pasteurella equiseptica, Salmonella pullorum, Escherichia coli, Streptococcus genitalium,* and *Bacillus subtilis*. Toxicity studies were conducted on a large number of animals of different species and no unfavorable reactions occurred. This new antibiotic appears to have poten-

tial therapeutic applications.—[*Louis-Jacques Decaris: Study on Streptomyces Lavendulae and Its Production of a New Antibiotic: Framycetin. Rev. Path. Gen. Comp. (Paris), 53, (May, 1953):676-679.*]—R.F.V.

Treatment of Pyometra in Dogs

During the five-year period from 1947 to 1951, 1.8 per cent of all surgical cases in dogs had pyometra. An analysis of age distribution showed that pyometra is a disease of older animals. Of 234 dogs with pyometra, only 21 per cent were 5 years old or less, whereas 75 per cent were in the age group of 6 to 12 years. A few animals were older than 12 years. Pyometra is not related to parturition or pregnancy. Of 241 cases, 64 per cent were nulliparous. Of 87 females in the series that had been pregnant, only 24 (34 per cent) were multiparous. Most of the cases (83 per cent) occurred at least two years after parturition. Eighty-five per cent of the cases had normal estrous periods and most of them occurred at least four to eight weeks after estrus. Total hysterectomy was done in 267 cases, of which 40 were combined with ovariectomy. There was an over-all mortality of 14 per cent due to anemia, intoxication, acute myocarditis, or hemorrhage. A follow-up of 209 cases showed that only 9 had an unsatisfactory result. These were due to paralysis, urinary incontinence, and hernia. Considering the age of the patients, the results of surgery in pyometra are satisfactory.—[*Gunnar Tufvesson: Operativ behandling av pyometra hos hund (Operative Treatment of Pyometra in Dogs). Nord. Vet.-med., 5, (April, 1953):273-288.*]—A.G.K.

BOOKS AND REPORTS

Diseases of the Eye

This book is an example of the human medical literature that can be advantageously used by the veterinary student and clinician. The text was apparently designed to provide an introduction to the subject of ophthalmology and a convenient reference source for the major aspects of ocular diseases.

Its concise style and systematic presentation provide a quick introduction and usable reference to the terminology and descriptions of ocular diseases. Although all the discussions are not applicable to veterinary medicine, this manual may be frequently employed by the veterinarian.

It is the reviewer's impression that the clinical problems encountered by the human ophthalmologist are frequently posed for the veterinarian. The opportunity for interprofessional exchange of information is also enhanced in the field of ophthalmology by the anatomical similarities of the eye and its adnexa in domestic animals and man. May's manual provides pertinent descriptions of the anatomy of each ocular tissue that is discussed. These discussions are for the most part well illustrated and may be used by the veterinary clinician. The major differences in the ocular features of domestic animals and man concerns the fundic structures.

Some of the illustrated descriptions of examination and surgical procedures may be adapted by the veterinarian. These discussions are consistently short and lucid. The descriptions of the surgical management of entropion, ectropion, and glaucoma add to the information contained in the veterinary literature.

There are parts of May's manual that are not descriptive of veterinary ophthalmology. Clinical entities are discussed that are not encountered in veterinary medicine and, conversely, many of our particular problems are naturally omitted. The specific infectious causes for human conjunctivitis and keratitis have not been routinely identified in animals. However, the descriptions of the clinical changes that occur in diseased ocular tissues are comparably recognized in animals and man.

This manual should provide a welcome and useful addition to any veterinarian's library.—[*May's Manual of Diseases of the Eye. Edited by Charles A. Perera, M. D. 491 pages. Illustrated. Williams and Wilkins Company, Baltimore 2, Md. 1953. Price $6.00.*]—E. J. CATCOTT.

Advances in Veterinary Sciences

This is the first volume of a series which plans to review progress in research pertinent to veterinary science and its application to the practice of veterinary medicine and veterinary public health. The term "anthropozoönoses" is used for diseases of animals transmissible to man, and diseases of man spread by animals. The editors have compiled discussions, by authorities, of a wide assortment of subjects of current interest under eight general headings: Animal Diseases and Human Welfare by K. F. Meyer; Virus Diseases by J. A. Baker and C. J. York; Sulfonamides and Antibiotics by S. F. Scheidy and D. K. Detweiler; Infertility Problems of Cattle by D. E. Bartlett and W. L. Boyd; Bovine Mastitis by W. N. Plastridge; Swine Diseases by S. H. McNutt; and Veterinary Public Health by J. H. Steele and 11 colleagues.

This is a refreshingly up-to-date (1952) yet down-to-earth text filled with recently procured information and challenging theories; the type of text one regrets having to lay aside. Subjects are treated briskly without belaboring the familiar or the obvious and without exhaustive detail, yet well documented with the sources of the details. Approximately 1,300 references are recorded in 66 pages of bibliography, items of which can be readily located by reference to the 20-page author index or the 26-page subject index.

However, some of the statistics quoted are not so laudable. The table of estimated annual losses from animal diseases indicates how badly needed is a reasonably accurate method of reporting morbidity and mortality for such. Who would guess that the annual loss from impaired fertility of cattle alone amounts to 7 per cent of the total value of all quadrupeds in the nation? Many may also be surprised to learn that losses from shipping fever of cattle are no greater than those from

Johne's disease and only thrice those of equine encephalomyelitis. Nevertheless, this text is an outstanding contribution, one which no veterinarian can well afford not to read. Later volumes should be welcomed.—[*Advances in Veterinary Sciences. Edited by C. A. Brandly and E. L. Jungherr. Vol. 1. Cloth. 431 pages. Academic Press, Inc., New York 10, N. Y., 1953. Price $9.00.*]—W. A. AITKEN.

Guide to the Dissection of the Dog

"Guide to the Dissection of the Dog" was written to aid students to gain quickly and thoroughly a knowledge of basic mammalian anatomy; however, the practitioner will also find this book helpful. The author makes no extravagant claims, for in the preface he writes, "This manual represents an experiment both as to choice of animal and plan of work."

The brief introduction sets forth and defines many of the more common anatomical terms, and an explanation is given for the nomenclature followed. The book is divided into seven parts. Part 1 carries through the skeletal system, and the second deals with the muscular system. Part 3 gives a description of the thorax, neck, and pectoral limb. Part 4 describes the abdomen, pelvis, and pelvic limb. Part 5 deals with the head; in part 6, a brief description of the central nervous system and its development is given. Part 7, an entirely new section (20 pp.), deals with the articulations. The bibliography lists 105 references arranged alphabetically.

The improved B N A or I N A terminology has been used almost entirely; however, texts such as Ellenberger and Baum, and Sisson and Grossman, which do not use either of these consistently, have been used frequently as references. While the author endeavored not to introduce any new terms without a precedent, he has used names of structures which were obviously the comparable structure in man, even though the names differ considerably from those used by Sisson and Grossman. Such differences add a burden to the student's work in anatomy.

Sisson certainly improved anatomical nomenclature over M'Fadyean's, Jones', Strangeways', and Chauveau's veterinary texts, and in a very real sense, Miller has pointed the way toward further improvement. Although any veterinary nomenclature will be influenced by human medical nomenclature, possibly Miller is too progressive along this line.

The "Guide" with its many excellent figures is a definite improvement over the earlier editions.

It should be noted that the material on the carpus and tarsus is not in keeping with descriptions of other portions of the skeletal system. The descriptions are too brief. Several omissions and inaccuracies were noted in the description of the muscular system. In part 3, there are some inconsistencies in describing vessels and nerves. The sequence of description is not always the same, descriptions are too brief on some major structures, and are too detailed on others of lesser importance.

The section on the central nervous system is good. The "Guide" would be enhanced if this section were enlarged. The new section on articulations is an excellent addition, but it is not complete and is subject to the errors of most first writings.

Since the book is a guide to be supplemented by lecture and other texts, it is the best one on the anatomy of the dog to date.

During the past year, it was the required reference book at 14 schools of veterinary medicine, was recommended at two other schools, and loaned to the students at one school. This speaks well for any new publication.—[*Guide to the Dissection of the Dog. Malcolm E. Miller. 3rd ed. 369 pages. Illustrated. Edwards Brothers, Inc., Ann Arbor, Mich. 1952. Price $5.75.*]—ROBERT W. DAVIS.

Sulfonamides and Antibiotics in Man and Animals

The first edition of this book, "The Sulphonamides in Theory and Practice", by Mr. J. Stewart Lawrence, consisted of 126 pages when published in 1946. The current second edition has been extensively enlarged (482 pages) to include discussions of the antibiotics and additional material on the sulfonamides. The second edition is coauthored by Mr. John Francis, professor of preventive medicine at the University of Queensland Veterinary School, who wrote, among other things, the section dealing with the veterinary uses of the chemotherapeutic drugs. Additional chapters dealing with special problems in man were contributed by Mr. A. Sorsby and Mr. P. G. Scott.

The first 155 pages are devoted to an excellent and thorough discussion of the basic pharmacology of the sulfonamides and antibiotics. The next 177 pages deal with the uses of these drugs in diseases found in man. The following 75 pages discuss the specific pharmacology, antibacterial potency, and the therapeutic use of sulfonamides and antibiotics in the control of diseases of domestic animals. The busy veterinarian will find in this section an excellent condensation of the recent veterinary literature on the uses of these drugs in the treatment of specific animal diseases.

The only major criticism which the reviewer would make of this book is the absence of any discussion of the toxic reactions of the sulfonamides in domestic animals. It has been the reviewer's experience that sulfonamide toxicity occurs rather often in animals and is worthy of emphasis in order to decrease the incidence of reactions. Toxicity reactions were considered adequately for man but this discussion applies only in part to domesticated animals where the species variations require special consideration in several instances.—[*The Sulphonamides and Antibiotics in Man and Animals. By J. Stewart Laurence and John Francis. Cloth, 482 pages. H. K. Lewis & Co. Ltd., London, 1953. Price 42s. (about $6.00).*]—L. MEYER JONES.

THE NEWS

Second Pan American Veterinary Congress to Be Held in Sao Paulo, Brazil

The Organizing Committee of the Second Pan American Congress of Veterinary Medicine has announced plans for, and regulations of, the Congress to be held in Sao Paulo, Brazil, April 3-10, 1954, and sponsored by the Fourth Centenary Committee of the City of Sao Paulo which was founded in 1554.

This Congress is one of a number of international and Pan American cultural and scientific congresses that will be held in Sao Paulo at various times throughout 1954 to help commemorate the founding of Brazil's capital city. It will be under the auspices of the faculty of veterinary medicine of the University of Sao Paulo and the Pan American Veterinary Medical Association. The Organizing Committee has issued invitations to veterinary schools, departments of veterinary science, and other veterinary agencies in the United States, Canada, and other countries and will be glad to receive membership applications from private practitioners who may wish to attend the Congress.

Plenary and Sectional Meetings

The regulations of the Second Pan American Congress of Veterinary Medicine provide for plenary and sectional meetings. At the plenary (general) sessions, reports on specified subjects will be presented by specially invited speakers. The sectional meetings are ten in number and will meet simultaneously. These sections are designated as: Section A—Bacterial Diseases; Section B—Viral Diseases; Section C—Parasitic Diseases; Section D—Physiopathology of Reproductive Diseases; Section E—Pastures, Grasses, and Animal Nutrition; Section F—Animal Husbandry;

View of downtown São Paulo showing some of the modern buildings and boulevards in the capital city of Brazil where the Second Pan American Veterinary Congress will be held, April 3-10, 1954. São Paulo, the most rapidly growing city in South America, is sometimes called "the Chicago of South America."

Section G—Clinics and Surgery; Section H—Hygiene and Technology of Foods; Section I—Animal Hygiene; and Section J—Teaching and Professional Subjects.

Membership, Applications, and Fees

The membership of the Congress will comprise honorary, effective, and facultative categories. *Honorary* members will be those designated on the honorary committee and persons especially invited by the veterinary schools. *Effective* members will be faculty members and other individual veterinarians. *Facultative* members will be other persons interested in veterinary science and animal production.

Applications for membership can be obtained from, and should be sent to, the Organizing Committee, Second Pan American Congress of Veterinary Medicine, P. O. Box 7064, Sao Paulo, Brazil. The AVMA central office has a few application cards which it will send to interested persons, on request, as long as the supply lasts.

The membership fee for effective and facultative members is 200 cruzeiros ($5, U. S.). Veterinary students may join for one-half the regular fee.

Organizing Committee

The chairman of the Organizing Committee of the Congress is Dr. Joao Soares Veiga and the secretary is Dr. Virginia Buff D'Apice. Other officers and members are Dr. Adolpho Martins Penha, first vice-chairman; Dr. José Assis Ribeiro, treasurer; and Drs. Armando Chieffi, Leovigildo Pacheco Jordao, Mario D'Apice, and Victor Carneiro, members.

Veterinarians who are interested in membership in the Congress or who would like to offer papers for the sectional meetings should communicate promptly with the secretary, Dr. Virginia Buff D'Apice, P.O. Box 7064, Sao Paulo, Brazil.

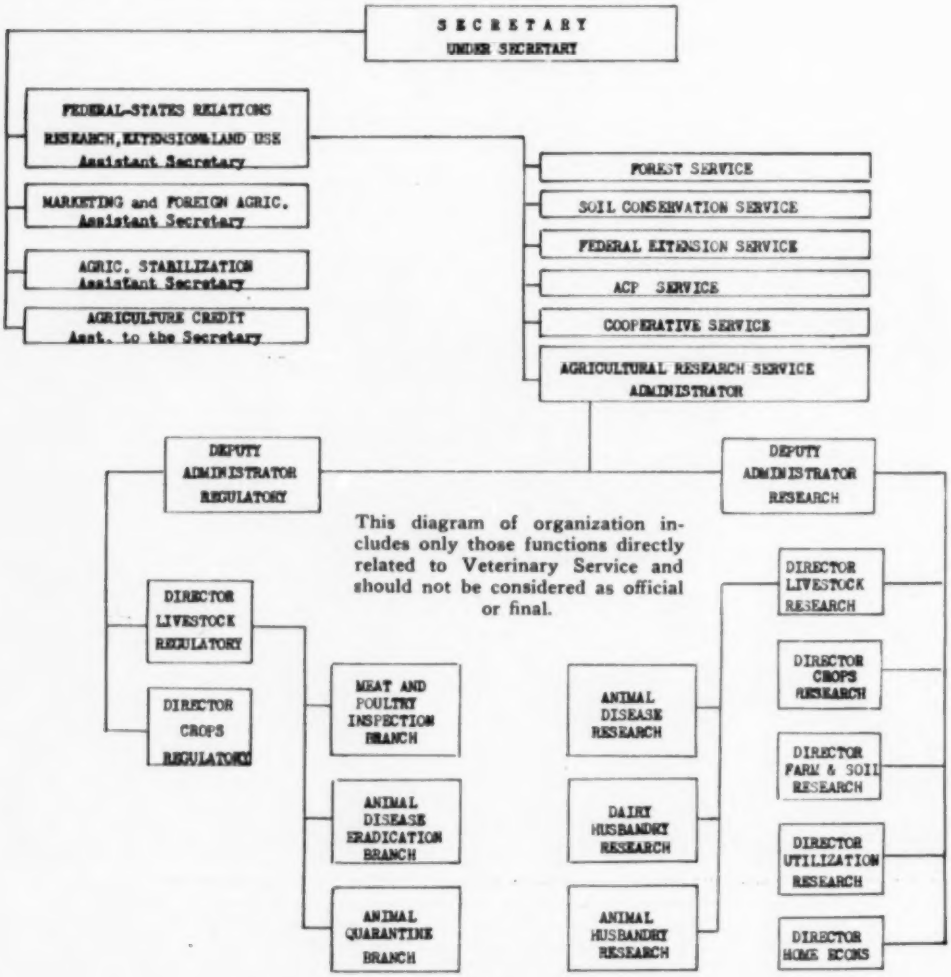
The First Pan American Congress was held in Lima, Peru, in 1951, during the Fourth Centenary of the founding of San Marcos University. At that time, it was decided that future congresses would be held every four years, as are the International Veterinary Congresses. On that basis, there would be a two-year interval between sessions of the International and Pan American groups. However, on account of the Fourth Centenary of Sao Paulo in 1954, it was agreed that the Second Pan American Congress of Veterinary Medicine would be held there that year, and succeeding ones in 1959, 1963, and so on. This schedule would provide two-year intervals with the I.V.C. sessions in 1957, 1961, and so on.

Picture taken at annual meeting of São Paulo Veterinary Medical Association. The following members of the Organizing Committee of the Second Pan American Congress of Veterinary Medicine are identified: (1) Dr. João Soares Veiga, chairman; (2) Dr. Adolpho Martins Penha, first vice-chairman; (3) Dr. Quineu Corrêa, second vice-president; (4) Dr. Virginia Buff D'Apice, secretary general; (5) Dr. José Assis Ribeiro, treasurer; (6) Dr. L. Pacheco Jordão, member; and (7) Dr. Mario D'Apice, member.

News From Washington

Reorganization of the U.S. Department of Agriculture.—Secretary of Agriculture Ezra Taft Benson stated on Nov. 2, 1953, that reorganization would proceed along lines previously announced.

The effect that reorganization may have on veterinary service activities of the U.S.D.A. is not well defined. A preliminary organization "pattern" is outlined below. Important provisions include: (1) There will no longer be a BAI, as such; (2) regulatory and research functions formerly conducted under the BAI will be separated; (3) poultry inspection probably will not move to the Meat Inspection Branch of the Agricultural Research Service; (4) Animal Disease Research has become a branch under Livestock Research which gives it less emphasis than formerly under the BAI.



Enrollment in Colleges of Veterinary Medicine, 1953-1954

Annually, in December, the JOURNAL reports on the enrollment in the schools of veterinary medicine in the United States and Canada (table 2). There is one discrepancy: The two Canadian schools give a fifth year of instruction in lieu of the two preprofessional years required in the United States; therefore, their first-year class can not be included in the table. Apparently, for the past two years the fifth or last year at the Quebec school was erroneously listed in the graduate column. This error has been corrected in the 1952 column of table 2. Without that error, there would have been a total enrollment decrease of 57 students two years ago and of 31 students last year, whereas this fall there is an over-all increase of 47 students.

TABLE 1—Preprofessional Training by Years

Freshmen	Years of preveterinary training: 2 yr. (%)	3 yr. (%)	4 yr. or more (%)
1947-1948*	41	12	13
1948-1949*			
1949-1950	47	27	26
1951-1952	40	32	28
1952-1953	42	25	33
1953-1954	41	26	33

*Of students admitted during these years, 34 per cent had one year of preprofessional college training.

Table 1 indicates for the past six years, the number of freshmen who have had various years of preprofessional training in the 17 United States schools.

STUDENT ENROLLMENT

Again, as a year ago, 33 per cent of the freshmen had the equivalent of four years of college work. This year, 235 have bachelor degrees and 16 have master degrees, a total of 28 per cent of the 895 freshmen in U. S. schools. They were selected from 2,634 applicants, a ratio of about 1:3, the same as in the previous two years.

National Science Foundation Announces 1954-1955 Fellowships

Under date of October 15, the National Science Foundation announced that application for graduate science fellowships for 1954-1955 would be received.

More than 700 students with special abilities in science will be selected for a year of graduate scientific study, during the academic year 1954-1955, in the National Science Foundation's Third Annual Graduate Fellowship Program. The closing dates for receipt of applications are Dec. 15, 1953, for postdoctoral applicants and Jan. 4, 1954, for graduate students working toward advanced degrees in science. The selections will be announced on or before April 1, 1954.

National Science Foundation fellowships are awarded to American citizens who will begin or continue their studies at the graduate level in the mathematical, physical, biological, medical, and engineering sciences during the 1954-1955 academic year.

Selections will be made solely on the basis of ability. The majority of the fellowships will go to graduate students seeking masters or doctors degrees in science, although a limited

TABLE 2—Student Enrollment for the Academic Year 1953-1954

Approved Schools	Fresh.	Soph.	Jun.	Sen.	Spec.	Grad.	Total	1952	Change
Alabama Polytechnic Institute	62	63	66	61	0	2	254	252	+ 2
California, University of	48	52	50	52	0	4	206	214	− 8
Colorado A. & M. College	65	61	58	57	0	12	253	239	+14
Georgia, University of	60	59	60	54	0	0	233	224	+ 9
Illinois, University of	36	29	28	33	2	9	137	134	+ 3
Iowa State College	67	67	57	60	1	20	272	263	+ 9
Kansas State College	61	60	60	58	0	8	247	252	− 5
Michigan State College	64	65	63	55	3	19	269	253	+16
Minnesota, University of	50	49	44	51	1	19	214	218	− 4
Missouri, University of	31	30	30	29	0	0	120	120	0
New York State Veterinary College	50	52	47	48	0	16	213	216	− 3
Ohio State University	72	70	68	70	0	15	295	293	+ 2
Oklahoma A. & M. College	41	35	31	34	0	2	143	138	+ 5
Ontario Veterinary College*	56	61	64	74	0	3	258*	272*	−14
Pennsylvania, University of	55	51	44	48	1	3	202	197	+ 5
Quebec Veterinary School*	21	23	25	18	1	0	88*	93*	− 5
Texas A. & M. College	64	55	56	44	1	15	235	222	+13
Tuskegee Institute	19	17	12	11	1	0	60	52	+ 8
Washington, State College of	50	44	41	47	0	2	184	184	0
Totals	972	943	904	904	11	149	3883	3836	+47

*Canadian schools have a five-year course so first-year students (64 at Ontario, 31 at Quebec) are not included.

number of awards will be made to postdoctoral applicants. Graduating college seniors in the sciences who desire to enter graduate school are encouraged to apply for the awards.

Stipends for National Science Foundation graduate fellowships will vary with the academic status of the fellows. First year fellows—students entering graduate school for the first time or those who have had less than one year of graduate study will receive annual stipends of $1,400. Fellows who need one final academic year of training for the doctors degree will receive annual stipends at the rate of $1,800. Fellows between these groups will receive stipends at the rate of $1,600 annually. The stipends for postdoctoral fellows will be $3,400 per year. Dependency allowances will be made to all married fellows. Tuition and laboratory fees and limited travel allowances will also be provided.

National Science Foundation graduate fellows may attend any accredited nonprofit institution of higher education in the United States or similar institutions abroad.

Applications for the 1954-1955 National Science Foundation Fellowship Program may be obtained from the Fellowship Office, National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C.

STUDENT CHAPTER ACTIVITIES

Illinois Chapter.—The University of Illinois Student Chapter of the AVMA held its annual freshman welcome on Sept. 24, 1953. President Tom Folkerts and President-Elect Jim Nadler started the meeting with short speeches concerning the purpose of the Chapter and some of its activities. Then the freshmen were introduced, individually, to the group and refreshments were served. The evening's program was completed with a talk by Dr. C. D. Van Houweling concerning the relationship between the student chapters and the AVMA.

s/NORMAN JONES, *Secretary.*

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Missouri Chapter.—The regular meeting of the University of Missouri Student Chapter of the AVMA was held on Oct. 12, 1953. The guest speaker, **Dean Slaughter** of the Missouri Bible College, gave an interesting talk on the activities of the Bible College.

On September 23, at the Chapter's annual smoker held in honor of the first year class, an Army Air Force film, "Fight for the Sky," was shown; and **Mr. Gordon Nance** of the Economics Department gave an interesting talk on "Where We are in the Business Cycle, How We Got There, and What to do About It."

Dean Groth welcomed the students back to school and introduced **Dr. Turner** of the dairy department; **Dr. Emmons**, professor of veterinary physiology, University of Sidney, Australia; and **Dr. Blake**, a new member of the staff at the University of Missouri School of Veterinary Medicine.

The following are officers of the Chapter: W. A. Grieb, president; Venton Goodnight, president-elect; Harry Forrest, vice-president; James Bozarth, secretary; and Lee Heutel, treasurer. Dr. Cecil Elder is faculty advisor.

After the program, refreshments were served.

s/JAMES BOZARTH, *Secretary.*

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Washington Chapter.—The Washington State College Student Chapter of the AVMA held its first meeting of the 1953-1954 school year on October 6.

The incoming freshmen were introduced to the students and faculty, and Dean Stone introduced this year's faculty to the student body.

Dave Urie, president, gave a report on the National AVMA convention held in Toronto this last summer. He also announced that the Washington State Veterinary Medical Association had voted to give $100 a year to this Chapter to help defray the expenses of sending a student delegate to the national convention.

Dr. R. E. Watts, the faculty advisor of the chapter, spoke on the importance of student participation in the Student Chapter.

George Bell was elected to fill the office of secretary. Two motion pictures were shown and the meeting ended with coffee and doughnuts for all.

s/W. D. BOHLKE, *Publicity Chairman.*

WOMEN'S AUXILIARY

Founding of Student Auxiliaries.—The work of the student auxiliaries was started by Mrs. A. E. Bott when she was vice-president of the Women's Auxiliary in 1947. During her term of office, Mrs. Bott met with women from various states at the annual meeting of the AVMA in Cincinnati in 1947.

At this meeting, Mrs. O. B. Curry of Morristown, Ind., was elected second vice-president and it was her project to contact the dean of each of the accredited veterinary schools and ask for the name of the wife of a student, who might be interested in helping to organize the wives into a group which would become a "student auxiliary." At that time there were about 12 accredited schools and by the 1948 meeting of the AVMA in San Francisco, Mrs. Curry had contacted all of them. Approximately half had organized and affiliated with the Women's Auxiliary to the AVMA, while some of the others were interested and in the process of organizing. Groups of student wives previously organized showed their willingness to coöperate by changing their name and their

organization to affiliate as a student auxiliary.

By the 1949 AVMA meeting in Detroit, practically all the accredited schools had groups ready to affiliate or were in the process of organizing, while some of the schools that were not yet accredited had their groups organized and were ready to affiliate just as soon as the school was accredited.

The number of accredited schools has now increased to 19 and where there is an AVMA student chapter, there is also a student "auxiliary" group, except at Tuskegee and Quebec.

From a small beginning in 1947 and 1948, this auxiliary work has grown rapidly.

The young women who have been active members in the student auxiliaries are now going into the Women's Auxiliary to the AVMA with a splendid understanding of the program and aims of the Auxiliary and of the American Veterinary Medical Association.

Mrs. D. Coughlin of Topeka, Kan., who worked enthusiastically with the student groups for two years, accomplished a great deal. She then turned the groups over to Mrs. H. S. MacDonald of Toronto when she became second vice-president. Mrs. MacDonald started the newsletter which has proved to be a wonderful success. During their term of office as first vice-president, Mrs. R. A. Runnells of East Lansing, Mich., and Mrs. L. R. Richardson of Ravenna, Ohio, have carried on the work in the same manner, so that each year larger projects are undertaken and greater interest shown.

The secretary mentioned the four instances to date of student auxiliary members joining the AVMA Auxiliary as a group: in 1952, the wives of the 1952 graduates of the University of Georgia and the University of Illinois; in 1953, the wives of the 1953 graduates of the Michigan State College and the University of Georgia. She also expressed the hope that very soon the Auxiliary would have as many "100 per cent" classes as the AVMA.—*Mrs. William Steele, Guelph, Ont. (Presented at the annual meeting of the Women's Auxiliary to the AVMA in Toronto, July 22, 1953.)*

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New Mexico Auxiliary.—The Women's Auxiliary to the New Mexico Veterinary Medical Association held its annual meeting at the Navajo Lodge, Ruidoso on Sept. 14, 1953. Following a most enjoyable luncheon, the business meeting was held and the following officers were elected: Mrs. Sam W. Wiest, Santa Fe, president; Mrs. M. V. Hinderliter, Portales, vice-president; and Mrs. Joe M. Miller, Alamogordo, secretary-treasurer. During the meeting, the members voted to donate $25 to the Student Loan and Research funds, and that these donations should be made in memory of the late Dr. Lester Patton of Albuquerque.

Mrs. Sam Wiest, vice-president, presided at the meeting in the absence of our president, Mrs. Lester Patton. Mrs. Tom Evans of Albuquerque was again elected to be our delegate to the 1954 AVMA meeting. We were happy to hear from her that the New Mexico Auxiliary led all other states in percentage-wise membership in the AVMA Auxiliary.

Highlights of the social activities included a visit to artist Harris Shelton's studio-gallery. A cocktail hour, sponsored by sales representatives W. B. Alexander and Duane Calkins (S. E. Massengill Co.), Truman Jones (Haver-Glover Laboratories), N. D. Keller (Pitman-Moore), and William Kotasek (Nicholson Manufacturing Co.), was enjoyed by ladies and gentlemen alike. After the smorgasbord at which Dr. E. E. Kraus was a delightful toastmaster, a full evening of dancing was provided in the Frontier Room of the Navajo.

s/(MRS. J. M.) MARGARET MILLER, *Secretary.*

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Eastern Iowa Auxiliary Organized.—On Oct. 15-16, 1953, 104 women met at the Hotel Montrose in Cedar Rapids to launch the Women's Auxiliary to the Eastern Iowa Veterinary Association, the first auxiliary in the forty-year history of the veterinary association. The officers of this new Auxiliary are Mrs. Birk Lowther, Hopkinton, president; Mrs. V. B. Vanderloo, Dubuque, president-elect; Mrs. Lester Proctor, Oelwein, vice-president; Mrs. Wm. M. Lynch, Cedar Rapids, secretary; and Mrs. Carl Tucker, Cedar Rapids, treasurer.

In addition to the business of organization, the women enjoyed a style show, card party, luncheon, and shopping.

s/MRS. WM. M. LYNCH, *Secretary.*

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Marion County (Oregon) Auxiliary.—Members of the Women's Auxiliary to the Marion County Veterinary Medical Association were entertained, on October 12, at the home of Mrs. Austin W. Eivers, with Mrs. John Shoemaker serving as co-hostess. They discussed plans for the fall meeting of the state Auxiliary in Portland on October 31.

s/MRS. A. W. EIVERS.

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West Virginia Auxiliary.—The thirteenth annual meeting of the Women's Auxiliary to the West Virginia State Veterinary Medical Association was held at the Daniel Boone Hotel, Charleston, Oct. 4-5, 1953, with 15 women in attendance. Mrs. E. R. Coon, president, presided over the business meeting held at the state capitol building in the office of the commissioner of agriculture. The members voted to continue annual donations to the AVMA Student Loan Fund and the AVMA Research Fund.

It was voted to continue revision of the constitution and have it available for adoption at the next meeting. Reports on the Toronto con-

vention were made by Mrs. V. H. Miller and Mrs. E. R. Coon, both of Charleston. Mrs. Miller is a past-president of the Women's Auxiliary to the AVMA and is a current member of the Committee on Policy of the International Auxiliary to the Veterinary Profession. She has also served her state auxiliary as president

The new officers of the Women's Auxiliary to the West Virginia Veterinary Medical Association are (left to right)—Mrs. Harry E. Fallon, president; Mrs. W. L. Rehkemper, vice-president; and Mrs. R. H. Frilen, secretary-treasurer.

for three years. Mrs. Coon, the retiring president of the state auxiliary, is chairman of the nominating committee of the national auxiliary.

The West Virginia auxiliary is most fortunate to be able to claim as a member another true dignitary, Mrs. S. E. Hershey of Charleston. Mrs. Hershey is a charter member of the national, as well as state, auxiliaries. She served as secretary of the national Auxiliary for fourteen years.

The following officers were elected for the ensuing year: Mrs. Harry E. Fallon, Huntington, president; Mrs. W. L. Rehkemper, Keyser, vice-president; and Mrs. R. H. Frilen, Beckley, secretary-treasurer.

Entertainment included a tour through the state capitol building, with an introduction to the governor. After a luncheon at the Army-Navy Club, the members enjoyed sight-seeing and shopping tours.

s/MRS. ROBERT H. FRILEN, *Secretary.*

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative By-Laws.

First Listing

BOWLING, LYNCE C.
3107 Eighth Ave., Los Angeles, Calif.
D.V.M., Iowa State College, 1920.

BYERLEY, JOHN H.
1084 Rosewood Dr., N.E., Atlanta, Ga.
D.V.M., Indiana Veterinary College, 1917.

COLLINS, ARTHUR M.
3909 S. Wenonah, Berwyn, Ill.
D.V.M., Iowa State College, 1946.

DENISON, MARGARET P.
2913 Wilshire Blvd., Oklahoma City, Okla.
D.V.M., Kansas State College, 1949.

DUCKENFIELD, HORACE
Rt. 2, The Dalles, Ore.
D.V.M., Texas A. & M. College, 1943.

HARRISON, FRANK L.
111 E. Woodworth St., Bad Axe, Mich.
D.V.M., Ontario Veterinary College, 1907.

LEVIN, HOWARD
1566 East 31 St., Brooklyn, N. Y.
D.V.M., University of Philippines, 1952.

LISCOMB, JOHN M.
1128 S. Myrtle, Monrovia, Calif.
V.M.D., University of Pennsylvania, 1943.

MCINTOSH, GEORGE E.
406 W. Division, Arlington, Texas.
D.V.M., U. S. College of Veterinary Surgeons, 1923.

MITCHELL, H. K.
551 Fraser St., North Bay, Ont.
D.V.M., Ontario Veterinary College, 1948.

RATH, REUBEN B.
14648 Cherrylawn Ave., Detroit, Mich.
D.V.M., Grand Rapids Veterinary College, 1912.

RIGBY, EDWARD J.
156 Princess St., Winnipeg, Man.
D.V.M., Ontario Veterinary College, 1932.

SERVAIS, HAROLD A.
Box 632, Tarboro, N. Car.
D.V.M., Alabama Polytechnic Institute, 1938.

WILLIAMS, CHARLIE L.
P. O. Box 646, Dothan, Ala.
D.V.M., University of Georgia, 1950.

Applicants — Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorsers.

First Listing

COBURN, GEORGE C.
Station Veterinarian, Ft. Hood, Texas.
D.V.M., Texas A. & M. College, 1939.
Vouchers: H. R. Ellis and D. W. Hubbard.

Holk, Herbert C.
O.M.U. Box 552, Patrick A.F.B., Cocoa, Fla.
D.V.M., Alabama Polytechnic Institute, 1945.
Vouchers: J. F. Morrow and M. M. Nold.

Miller, Robert J.
27 Pioenweg, The Hague, Holland.
D.V.M., Iowa State College, 1938.
Vouchers: M. W. Scothorn and E. S. Watkins.

Moro, Manuel, Jr.
Facultad de Medicina Veterinaria, Barranco, Lima, Peru.
D.V.M., Facultad de Medicina Veterinaria, Peru.
Vouchers: T. Ramos and H. Kafka.

Sibert, Herbert F.
226 W. Jackson Blvd., Chicago, Ill.
D.V.M., Kansas State College, 1934.
Vouchers: R. A. Resseguie and E. W. Young.

Second Listing

Berger, Joseph H., Office of Air Surgeon, Hq. 12th Air Force, APO 12, c/o PM, New York, N. Y.

Clayton, Frederick W., 10004 Crestwood Rd., Kensington, Md.

Figueroa, Juan, Apartado 23, Barranco, Lima, Peru.

Riley, William E., Army and Navy Hospital, Hot Springs, Ark.

1953 Graduate Applicants

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

First Listing

Michigan State College*

O'Connor, James T., D.V.M.
Rt. 3, Ionia, Mich.
Vouchers: G. R. Moore and J. L. Norton.

Miller, James R., D.V.M.
1719 Byrd Dr., Kalamazoo, Mich.
Vouchers: D. B. Coohon and D. E. Bloomquist.

Second Listing

Alabama Polytechnic Institute*

Baker, Osborne E., Jr., D.V.M., Box 113, Nichols, S. Car.

Branson, Joseph W., D.V.M., 9 McDonough Blvd., S. E., Atlanta, Ga.

Colorado A. & M. College

Keyser, Raymond C., D.V.M., Box 546, Ronan, Mont.

Iowa State College

Bowne, John G., D.V.M., 437 Pammel Court, Ames, Iowa.

Michigan State College

Newbury, Fred L., D.V.M., 2823 S. Harlem Ave., Berwyn, Ill.

University of Pennsylvania

Lehman, Robert J., V.M.D., 1611 Barringer St., Philadelphia, Pa.

Marx, Elmer E., Jr., V.M.D., 192 E. High St., Waynesburg, Pa.

McClure, John P., Jr., V.M.D., Box 471, Tonasket, Wash.

Texas A. & M. College

Pigott, Martin B., Jr., D.V.M., 326 Claremore, Corpus Christi, Texas.

COMMENCEMENT

University of Montreal.—At the 1953 commencement exercises of the University of Montreal, School of Veterinary Medicine, the following 23 candidates were presented for the D.V.M. degree:

Pierre Bergeron
Laurier Bernier
Fernand Bouliane
Yvan Bourgouin
Jules Bourque
Pierre Cabot
Roger Desgroseillers
Russell Giguere
Jean-Paul Hardy
Rolland-Paul Jobin
Jean-Bernard Lacharite
Guy Lafbeniere
Pierre Larue
Roger Leduc
Jean-Jacques Lessard
Jean Mauffette
Claude Mayrand
Paul-Andre Morin
Leo Normandin
Albert Paris
Paul Perras
Andre Pilon
Roger Toupin

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U. S. Bureau of Animal Industry are reported as of Oct. 23, 1953.

NEW APPOINTMENTS

Gail R. Comfort, Chicago, Ill.
Willard C. Higby, Salt Lake City, Utah.
Robert L. Kerns, Milwaukee, Wis.
Frank J. Koenig, Jr., Omaha, Neb.
Julius P. Kreier, Mexico City, Mex.
Kenneth L. Kuttler, Beltsville, Md.
Paul D. Lampru, Montgomery, Ala.
George W. Miller, St. Joseph, Mo.
Paul W. Miner, Boston, Mass.
Robert B. Moody, Mexico City, Mex.
John A. Nielsen, Oklahoma City, Okla.
Alfred G. Olivier, Trenton, N. J.
Lee H. Osborn, Indianapolis, Ind.
Robert N. Richardson, Mexico City, Mex.
Franklin H. Suits, Tampa, Fla.
Grant B. Terrell, Kansas City, Kan.

RESIGNATIONS

Fred Barta, Omaha, Neb.
Paul P. Boriskie, Lake Charles, La.
Humberto Zayas Chardon, San Juan, P. R.
J. Frank England, Fort Dodge, Iowa.

Lewis A. Goldfinger, New York, N. Y.
Frank Gotay, San Juan, P. R.
John E. Greenway, Cleveland, Ohio.
Allie A. Holbrook, San Antonio, Texas.
William W. Lockridge, Albuquerque, N. M.
Glyde A. Marsh, Columbus, Ohio.
William H. Rhodes, Jacksonville, Fla.
James R. Seelbach, Saint Louis, Mo.
Carl F. Wells, Indianapolis, Ind.

TERMINATIONS

Clarence G. Cole, Ames, Iowa.
Julius P. Kreier, Philadelphia, Pa.
Royal F. Norstrum, Chicago, Ill.

RETIREMENT

Jacob Kalmansohn, Omaha, Neb.

SEPARATED (no return from military furlough)
Roy J. Milleret, Jefferson City, Mo.

DEATHS

Beck B. Bowen, South St. Joseph, Mo.
Calvin C. Oldham, Jr., Mexico City, Mex.

TRANSFERS

William H. Bassett (return from military furlough), from Omaha, Neb., to Allentown, Pa.
William L. Black, Jr., from Albuquerque, N. M., to Mexico City, Mex.
Ralph H. Benedict, from Milwaukee, Wis., to Chicago, Ill.
Donald E. DeTray, from Beltsville, Md., to Washington, D. C.
Joseph W. Etheridge, from Denver, Colo., to Sioux City, Iowa.
Walter A. German, from Menominee, Mich., to Pittsburg, Kan.
Robert B. Leathers, from Kansas City, Kan., to Fort Worth, Texas.
Earl R. Mackery, from Mexico City, Mex., to Atlanta, Ga.
William M. Moulton, from Bismarck, N. Dak., to Mexico City, Mex.
Dearrold I. F. Palmer, from St. Joseph, Mo., to Kansas City, Kan.
Michael J. Polino, from Harrisburg, Pa., to New York, N. Y.
Hyman M. Steinmtez, from Boston, Mass., to Baltimore, Md.
Mario S. Tongson, from Mason City, Iowa, to Omaha, Neb.
Ernest L. Wentz, from New York, N. Y., to Chicago, Ill.

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Changes Not Listed in November Journal.—The following changes in the force of veterinarians in the U. S. Bureau of Animal Industry were omitted in the November JOURNAL (*see* p. 476) due to lack of space.

RESIGNATIONS

Roger G. Feldman, Denver, Colo.
Leonard J. Kimray, Madison, Wis.
Clarence F. Manziano, Harrisburg, Pa.
Joseph B. Schorfheide, Los Angeles, Calif.
Lawrence Segal, Lansing, Mich.
Edward L. Trundy, Augusta, Maine.

RETIREMENTS

Earl H. Carter, Omaha, Neb.
Fred N. Elwell, Fort Worth, Texas.
Grover C. Gulick, Oklahoma City, Okla.
Warren D. Howe, Sioux City, Iowa.
George D. Loder, Portland, Ore.
Harry K. McIntosh, Chicago, Ill.
William O. Ney, Lake Charles, La.
George G. Tanenbaum, West Fargo, N. Dak.
Charles Walter, Sioux City, Iowa.
Henry S. Weber, Lancaster, Pa.
Clifton L. Whittington, San Diego, Calif.

SEPARATIONS

Thomas E. Anderson, Des Moines, Iowa.
David J. Chalmers, Des Moines, Iowa.
Merrill F. Frevert, Des Moines, Iowa.
Thomas W. Gidley, Des Moines, Iowa.
George G. Hink, Des Moines, Iowa.
Bert Hollingshead, Des Moines, Iowa.
Jacob C. Kaiser, Des Moines, Iowa.
Frank C. Kochendorfer, Des Moines, Iowa.
Cecil F. McDonald, Des Moines, Iowa.
Wilford H. Marks, Des Moines, Iowa.
Ole N. Schultz, Des Moines, Iowa.
Henry G. Smith, Des Moines, Iowa.
Clarence B. Strain, Des Moines, Iowa.
Frederick D. Wertman, Des Moines, Iowa.
Charles W. Wiley, Des Moines, Iowa.
Frank B. Young, Des Moines, Iowa.

AMONG THE STATES AND PROVINCES

Alabama

Tuskegee Institute Installs New President.—On Sunday, Nov. 1, 1953, Luther Hilton Foster was installed as president of Tuskegee Institute. The exercises included a symposium on "The New South and Higher Education" on Saturday, and the inaugural ceremonies and reception on Sunday.

Arizona

Maricopa County Association.—On Oct. 20, 1953, Maricopa County veterinarians and their wives met at the Officer's Club, William's Air Force Base. Captain K. R. Wilcox, base veterinarian, was host for the evening. The principal speaker was **Dr. R. E. Reed,** Department of Animal Pathology, University of Arizona, Tucson. His topic, "Coccidioidomycosis in Dogs," was well illustrated by kodachrome slides, microscopic screen projections, and by roentgenograms. A discussion relating to the prevalence of this disease in dogs elsewhere in the state followed Dr. Reed's presentation.

S/CHARLES J. PRCHAL, *Secretary.*

Colorado

Officers of Northern Colorado Association.—The following officers have been elected to serve the Northern Colorado Veterinary Medical Association for the ensuing year: Drs. Harold J. Hill, Fort Collins, president; O. R. Adams, Fort Collins, president-elect; and William D. Carlson, Fort Collins, secretary-treasurer. This Association meets the second Monday of each month.

S/WILLIAM D. CARLSON, *Secretary.*

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Dr. Farquharson Ill.—Dr. James Farquharson (COL '21), past-president of the AVMA and a staff member of Colorado A. & M. College,

suffered a mild coronary thrombosis while on a professional trip with his son, Bruce (COL '52), at Kansas City, Mo., on October 26. He was to be confined to a hospital for at least three weeks. His son, Jim, is a freshman at Northwestern University, Evanston, Ill., and Bruce is in practice at Phoenix, Ariz.

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New Ruling Affects Renewal of Colorado Veterinary Licenses.—The passage of a new veterinary practice act by the 1953 Colorado General Assembly requires, for the first time, the annual renewal of all Colorado veterinary licenses.

s/V. D. STAUFFER, *Secretary, State Board of Veterinary Medicine.*

TO ALL HOLDERS OF A COLORADO LICENSE TO PRACTICE VETERINARY MEDICINE:

Chapter 244 of Colorado session laws 1953 requires all holders of a Colorado license to practice veterinary medicine to file an annual application for renewal of the license before November 30 of each year. All licenses expire on December 31 of each year unless renewed.

A fee of one dollar ($1.00) is required for the renewal of the license.

The law further requires each licensee to notify the Secretary of the Board *immediately of any change of address.*

Since the records of the Board contain very few present addresses of license holders, the Board is requiring that all licensees send their *correct address and license number* to the secretary of the Board, Dr. V. D. Stauffer, 5500 Wadsworth Blvd., Arvada, Colo., immediately. An application for license renewal will then be sent to the licensee to be filled out and returned to the Secretary with the one dollar fee for license renewal.

This action pertains to all holders of a Colorado veterinary license wherever they may be who wish to have their Colorado license remain in effect.

District of Columbia

District Association.—The District of Columbia Veterinary Medical Association held its fourth quarterly meeting at the Walter Reed Army Medical Center on October 13, President E. Barnwell Smith presiding.

Dr. W. T. S. Thorp, delegate to the AVMA

Roundup Riders of the Rockies

Four veterinarians were on the trail this year, as officials, in the eight-day timberline trek with some hundred other riders. Brigadier General Wayne O. Kester (center), chief veterinarian, U. S. Air Force, a director of the organization, served as chief judge of the ride competitions. The others are (left to right)—Captain Forrest E. Button, Air Force Base veterinarian at Colorado Springs (winner last year), trail horse judge; Colonel Harry A. Gorman, U.S.A.F., military instructor at Ohio State University, official veterinarian and judge; Montie Montana, trick rider, who roped President Eisenhower during his inauguration and whose son is a student at the School of Veterinary Medicine, University of California; and Dr. V. D. Stauffer, Arvada, Colo., official veterinarian and judge.

House of Representatives, reported on the business activities of the House during the Toronto meeting.

A panel discussion on "Recent Advances in Orthopedic Surgery on Small Animals" was presented by **First Lt. William I. Gay**, V.C., **Drs. E. E. Ruebush**, **J. Raymond Currey**, and **Major Ben Rutledge**, M.C.

s/WILLIAM C. PATTERSON, *Secretary.*

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Association of Military Surgeons.—The annual convention of the Association of Military Surgeons was held at the Hotel Statler, Washington, D. C., Nov. 9-11, 1953.

At the opening session on November 9, **Brig. Gen. J. L. Hartman**, chief of the Veterinary Corps, U. S. Army, discussed "Recent Advances in Military Veterinary Medicine." At the Veterinary Section on November 11, the following veterinarians presented papers: **Drs. W. T. S. Thorp**, U. S. Public Health Service, chief, Section on Comparative Pathology, National Institutes of Health, Bethesda, Md.; **M. S. Shahan**, U. S. Bureau of Animal Industry, Washington, D. C.; **Lt. Col. T. C. Jones**, V.C., U. S. Army, Armed Forces Institute of Pathology, Washington, D. C.; and **Lt. Col. Walter T. Carll**, V.C., U. S. Army, Washington, D. C.

s/WINCHELL McK. CRAIG, M.D., *President.*

Illinois

Conference for Veterinarians.—Several hundred veterinarians from all parts of the state attended the thirty-fourth annual Illinois veterinary conference and short course at the College of Veterinary Medicine, University of Illinois, Urbana, Oct. 15-17, 1953. The meeting was truly a postgraduate course in the latest developments in the treatment, control, and eradication of livestock diseases, with visiting speakers, practicing veterinarians, and staff members of the College coöperating to demonstrate surgical techniques, and diagnostic procedures, including tests for brucellosis, vibriosis, and tuberculosis in cattle and anesthesia in horses.

In addition to members of the faculty, the following speakers presented papers on the scientific program: **Drs. F. E. Bartley**, Sidell; **J. R. Brown**, Ottawa; **A. H. Craige, Jr.**, Pitman-Moore, Co., Indianapolis, Ind.; **Glen I. Case**, Kewanee; **R. H. Hollis**, Abbott Laboratories, North Chicago; **A. K. Merriman**, Springfield; **C. L. Nelson**, Jewell; and **S. J. Roberts**, New York State Veterinary College, Ithaca.

On the evening of October 15, those in attendance enjoyed a banquet at the Illini union building on the campus.

s/L. E. BOLEY, *Chairman, Conference Committee.*

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Short Course in Poultry Diseases.—A short course in poultry diseases for practitioners was held October 14, preceding the thirty-fourth annual veterinary conference of the University of Illinois. This course was given at the request of veterinarians to meet the increased need for professional veterinary service in the field of poultry pathology and hygiene. It consisted of lectures and demonstrations on the diagnosis, prevention, and control of poultry diseases, including: autopsy, bleeding, and vaccination techniques; laboratory procedures for practitioners; dispensing practices; principal viral, bacterial, fungous, and parasitic infections of Illinois poultry; nutritional diseases; and miscellaneous problems.

s/J. O. ALBERTS.

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Dr. Van Houweling Joins Veterinary Staff.—The newest addition to the staff of the College of Veterinary Medicine at the University of Illinois is Dr. C. D. Van Houweling (ISC '42) who began work as an instructor in veterinary clinical medicine on September 21. He will instruct classes in large animal clinical medicine and take graduate training in veterinary pathology and hygiene.

Before coming to the University, Dr. Van Houweling was on the staff of the American Veterinary Medical Association for five years. He served as assistant executive secretary of the association for three years, and prior to that as its director of professional relations.

Before entering the army veterinary corps during World War II, Dr. Van Houweling practiced in Springfield, Ill. He was discharged from the army with the rank of captain, after serving three years, and joined the staff of the Illinois Agricultural Association, serving as director of the department of veterinary medical relations for two years.

Dr. Van Houweling is a member of the American Veterinary Medical Association, Illinois V.M.A., Chicago V.M.A., American Public Health Association, Illinois Public Health Association, United States Livestock Sanitary Association and Theta Xi fraternity.

Dr. and Mrs. Van Houweling and their four sons reside in St. Joseph, Ill.

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Mrs. Bott Honored During European Tour.—When Dr. and Mrs. A. E. Bott visited Copenhagen, Denmark, as a part of the tour following the Fifteenth International Veterinary Congress, Mrs. Bott was presented with the "Mother's Cup" by Mr. Svenningsen of the American Legion of Denmark, who started Mother's Day in Denmark in 1928. Mrs. Bott, U. S. Mother of the Year, and the third woman to receive this honor, was also acclaimed in the other countries visited on the European tour.

Indiana

Wabash Valley Association.—At the September 16 meeting of the Wabash Veterinary Medi-

cal Association in North Manchester, **Dr. H. E. Amstutz,** chief ambulatory clinician, School of Veterinary Medicine, Ohio State University, discussed "Sterility in Cows," with illustrations.

The women were entertained by Mr. and Mrs. Harold Fowler of North Manchester who told of their experiences while living in India, and showed a film of the animals they had hunted and of tiger cubs they captured for the Cincinnati zoo.

Dr. and Mrs. H. A. Stevens of North Manchester were hosts.

s/J. L. KIXMILLER, *Resident Secretary.*

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Sixth District Association.—The Sixth District (Ind.) Veterinary Medical Association met in Crawfordsville on September 15. The speaker was **Dr. Briganze,** who is in charge of the speech department at Wabash College in Crawfordsville. This proved very interesting, because of the beautiful pictures he had taken in Europe and his wealth of knowledge in explaining them.

Dr. and Mrs. W. D. Blind were hosts.

s/J. L. KIXMILLER, *Resident Secretary.*

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Michiana Association.—On Oct. 15, 1953, the members of the Michiana Veterinary Medical Association and its Auxiliary were treated to a conducted tour through the Pitman-Moore Co. research farm and virus laboratory at Zionsville. The new building housing the virus laboratory is one of the most modern structures devoted to research of viruses in animals.

After a delicious chicken dinner, the group was conducted through the biological plant where they were amazed at the cleanliness, exactness, and skill that is maintained to produce the veterinary products.

The barbeque provided in the recreational area topped a very educational and enjoyable day.

s/BRUCE HOSTRAWSER, *Secretary.*

Iowa

Eastern Association.—The fortieth annual meeting of the Eastern Iowa Veterinary Association was held Oct. 15-16, 1953, in the Hotel Montrose, Cedar Rapids.

The following speakers participated in the scientific program: **Drs. H. U. Garrett,** Des Moines, chief, Division of Animal Industry; **C. W. Brown,** veterinarian in charge, U. S. Bureau of Animal Industry, Des Moines; **F. S. Sharp,** Ute, president of the state Association; **M. J. Twiehaus,** head, Department of Pathology, School of Veterinary Medicine, Kansas State College, Manhattan; **Samuel G. Paul,** Clarence; **Forrest E. Brutsman,** Traer; **Robert E. Savage,** Monticello; **L. M. Hutchings,** head, Department of Veterinary Science, Purdue University, Lafayette, Ind.; **Maurice C. Larson,** Keystone; **Paul T. Gambrel,** Winnebago, Ill.; **John W. Carey,** West Liberty; **David Ungs,** Dyersville; **J. W. Sexton,** Sumner; **E. M. Baldwin,** Corn States Serum Company, Omaha, Neb.; **John R. Dick,** Fort Dodge Laboratories, Fort Dodge; **Birk C. Lowther,** Hopkinton; **William M. Lynch,** Allied Laboratories, Cedar Rapids; and **Robert B. Helming,** Cresco.

Dr. Granpaolo Maestrone, professor of veterinary medicine at Milan University, Milan, Italy, who is on a year's leave of absence to study research and teaching methods in this country, told of some of the livestock problems in Italy.

New officers of the Association are Drs. W. L. Andrews, Milton, president; Warren E. Bowstead, Lowden, vice-president; Wayne H. Thompson, Earlville, secretary; and Wm. M. Lynch, Cedar Rapids, treasurer. Dr. Robert E. Savage, Monticello, was named trustee for a three-year term.

s/WAYNE H. THOMPSON, *Secretary.*

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Dr. Bergman Honored.—Dr. H. D. Bergman, dean emeritus, Division of Veterinary Medicine, Iowa State College, Ames, was the recipient, recently, of the Alumni medal presented annually for devoted service to Iowa State College through alumni activities. Dr. Bergman received his D.V.M. degree at Iowa State in 1910 and has been on the faculty there since 1911.

He has been a member of the athletic council for more than twenty years and, for much of that time, Iowa State's faculty representative to the Big Seven Athletic Conference, serving the latter both as secretary and chairman. He has also served as president of the Memorial Union Corporation and of the Iowa State College Research Foundation. Dr. Bergman is continuing his services with the veterinary faculty on a part-time basis.

Kansas

State College Receives Library Collection.—The KSC news bureau recently announced that what is believed the most valuable and comprehensive collection of veterinary literature in the nation has been presented the School of Veterinary Medicine at Kansas State College, Manhattan.

It is the library collection of the late Dr. D. M. Campbell, a 1909 graduate, who formerly was owner and editor of *Veterinary Medicine.* The gift, made through his widow, will be known as the Dr. D. M. Campbell Collection, and will be kept separate.

Included, among other items, are complete sets, beginning in 1877, of the *American Veterinary Review,* now the *Journal of the American Veterinary Medical association;* complete sets of what is now known as *Veterinary Medicine,* beginning with the *Iowa-Nebraska Veterinary Bulletin* in 1905; also complete sets of the *North American Veterinarian,* and several foreign publications.

Textbooks and veterinary publications not elsewhere obtainable are included in the collection.

Michigan

Southeastern Association.—At the October 15 meeting of the Southeastern Michigan Veterinary Medical Association, **Dr. David L. Coffin,** of the Angell Memorial Animal Hospital in Boston, discussed "Endocrine Diseases Associated with Hair Loss in Dogs."

s/GILBERT MEYER, *Secretary.*

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Doctoral Appointments Open to Qualified Students.—The School of Graduate Studies, Michigan State College, offers the following predoctoral and postdoctoral appointments to qualified students. Inquiry should be directed to the Dean, School of Graduate Studies, Michigan State College, East Lansing, Mich., unless other directions are given.

Graduate Assistantships.—Stipends range from $1,000 to $1,400, with a few at higher values, depending upon the nature and extent of service required. Inquiries should be directed to the appropriate department heads.

Tuition Scholarships.—These appointments carry remission of fees and, in the case of some foreign students, an additional award of $75.00 per quarter.

Predoctoral Fellowships.—About 20 such appointments are made each year. Stipends range from $500 to $1,200, and in most but not all cases fees are waived. No service to the College is required.

Postdoctoral Fellowships.—One of these, carrying a stipend of $3,000, is awarded each year for research in a field for which the College has appropriate facilities.

s/THOMAS H. OSGOOD, *Dean.*

Minnesota

Southern Society.—The Southern Minnesota Veterinary Medical Society held its fall meeting at the Austin Country Club on October 7. At the business meeting, the following officers were elected: Drs. J. M. Higbee, Albert Lea, president; J. L. Cavanaugh, Plainview, vice-president; G. A. Young, Austin, secretary-treasurer; and Drs. R. B. Helming, Cresco, Iowa, and R. Rieke, Fairmont, board members.

During the scientific session, **Dr. Karl R. Reinhard,** Rocky Mountain Laboratory, Hamilton, Mont., spoke on leptospirosis; and **Mr. A. J. Luedke, Drs. J. H. Sautter, R. L. Kitchell,** and **G. A. Young,** of the School of Veterinary Medicine, University of Minnesota, discussed fetal abnormalities of swine resulting from the administration of modified hog cholera virus.

s/GEORGE A. YOUNG, *Secretary.*

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Southwest Society.—On September 30, the Southwest Minnesota Veterinary Society met at the Driftwood near Windom. The following speakers participated in the program: **Drs. C. M. Stowe,** St. Paul; **E. D. McCaully,** Sioux City, Iowa; and **W. R. Pritchard,** St. Paul.

The following are officers of the Society: Drs. R. J. Tabola, Jackson, president; R. W. Rieke, Fairmont, vice-president; Eiler D. Frederiksen, Windom, secretary-treasurer; and J. Fitch, Fairmont, O. E. Doure, Marshall, and H. E. Schwermann, New Ulm, members of the board.

s/EILER D. FREDERIKSEN, *Secretary.*

Missouri

Kansas City Association.—The Kansas City Veterinary Medical Association met at the Continental Hotel on October 20. The guest speakers were **Drs. R. H. Hayes,** Bonner Springs, Kan.; **F. L. Hart,** Hiawatha, Kan.; and **S. A. Peck,** Oak Grove, Mo. They discussed practice adjustments to meet changing economic conditions. As a part of the scientific program, the motion picture, "Teschen Disease in Swine," was shown.

s/J. C. DAVIS, *Secretary.*

New Mexico

State Association.—A most successful convention of the New Mexico Veterinary Medical Association assembled in Ruidoso, on September 14 and 15, and elected the following officers: Drs. O. J. Rollog, Albuquerque, president; John E. Abbott, Carlsbad, vice-president; and Joe M. Miller, Alamogordo, secretary-treasurer.

Out-of-state veterinarians who addressed the convention were **Drs. Raymond Hander,** Bridwell Hereford Ranch, Windthorst, Texas; **G. R. Moore,** director, large animal clinic, School of Veterinary Medicine, Michigan State College, East Lansing; and **Kenneth W. Smith,** practitioner, Sioux City, Iowa. The addresses were all most informative and interesting.

Members of the association who participated in the program were **Drs. O. J. Rollog,** vice-president, presiding in the absence of the president; **E. E. Kraus,** toastmaster for the banquet; and **U. McElyea** and **J. Miller,** host veterinarians, from Las Cruces and Alamogordo, respectively.

Santa Fe will be the next year's meeting place and the date is tentatively set for the fall season. In addition to the 60 veterinarians, wives, and guests who attended this year's meeting, it is hoped that more of the older members will attend the twenty-second annual convention in 1954.

s/JOE M. MILLER, *Secretary.*

New York

Postgraduate Courses.—The Committee on Postgraduate Education of the Veterinary Medical Association of the New York City, Inc.,

is sponsoring the following courses for its fall program which began October 1: radiology, by Drs. John McClenahan and Harry Burnett, assisted by Miss A. Groesbeck; clinical pathology, by Dr. David L. Coffin; and ophthalmology, by Dr. Dan M. Gordon.

These courses are designed primarily for the busy practitioner and are open to members of the Westchester and Long Island Veterinary Medical Associations as well as the New York City Association.

s/C. E. DECAMP, *Secretary.*

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New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held Nov. 4, 1953, at the New York Academy of Sciences. **Dr. F. E. Eads**, manager, Department of Veterinary Medicine, Parke, Davis & Co., Detroit, Mich., discussed "Notes on Some of the Barbituric Acid Derivatives for the Small Animal Veterinarian."

The Association now has its own telephone number which is listed in the Manhattan directory—TEmpleton 2-8665. This is a direct wire to the headquarters of the Association.

s/C. E. DECAMP, *Secretary.*

• • •

Farewell Dinner-Dance for Schroeders.—On Oct. 4, 1953, friends and members of the Veterinary Medical Association of New York City, Inc., honored Dr. and Mrs. Charles Schroeder at a dinner-dance. Dr. Schroeder, who has served for twelve years as secretary-treasurer of the New York City Association, became general manager of the San Diego (Calif.) Zoo on November 1.

Dr. Schroeder was given credit for much of the splendid progress of the Association he has served so well.

s/C. D. DECAMP, *Secretary.*

North Carolina

Central Carolina Association.—The Central Carolina Veterinary Medical Association met at Greensboro on Sept. 9, 1953, at the O'Henry Hotel. **Dr. H. J. Rollins**, state veterinarian, discussed calfhood vaccination.

New officers of the Association are Drs. J. T. Dixon, Winston Salem, president; J. A. Jordan, Lexington, vice-president; J. S. Ellis, Greensboro, secretary; and F. P. Wise, Greensboro, treasurer.

s/CLYDE W. YOUNG, *Resident Secretary.*

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Personal.—Dr. B. L. Carraway (API '50) has purchased the hospital and practice of Dr. Byron H. Brow in Weldon.

Ontario

O.V.C. Veterinary Clinic.—Beginning Oct. 1, 1953, the Ontario Veterinary College is operating a clinic for farmers of the district. This service is in charge of Drs. D. C. Maplesden and J. F. Cote, who are accompanied on calls by students who expect to graduate next May. Charges will be based on the schedule of fees used by practicing veterinarians in the area.

s/T. LLOYD JONES, *Dean.*

• • •

New Staff Members at O. V. C.—The following members have been added to the teaching staff at the Ontario Veterinary College, Guelph: Dr. D. L. T. Smith has been appointed professor and head of the Department of Bacteriology to succeed Dr. A. F. Bain who died on Aug. 27, 1953. Dr. Smith returned to the Ontario Veterinary College last June after spending two years at Cornell University. Dr. F. J. Milne is professor of surgery. For the past three years, he has been a member of the veterinary faculty at Colorado A. & M. College, Fort Collins. Dr. D. C. Maplesden, a native of Acton, and formerly veterinarian at Flat Top Ranch in Texas, will help operate the new veterinary clinic. Dr. Cote, who will also help with the clinic, operated a practice in Guelph for more than twenty years.

s/T. LLOYD JONES, *Dean.*

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Death of Dr. Anderson.—Dr. Joseph Lyons Sheilds Anderson of the Department of Medicine and Surgery, Ontario Veterinary College, died suddenly at Weston on Oct. 7, 1953, after a lengthy illness. He is survived by his wife and one son, age 11.

Dr. Anderson held a Diploma in Pharmacy from the University of Manitoba as well as the degree of Doctor of Veterinary Medicine from the Ontario Veterinary College. Following graduation in 1941, he lived in Winnipeg until September, 1952, when he joined the faculty at the Ontario Veterinary College. Because of illness, Dr. Anderson took leave from his duties at the college. During the short time he was active as a lecturer in pharmacology, it was apparent to his students that he was an excellent teacher. He showed great promise as a valued member of the faculty and his friendliness endeared him to all those who were privileged to know him. He was buried at Woodlawn Cemetery, Guelph, on Oct. 10, 1953.

Dr. Anderson is the sixth member of the Onterio Veterinary College faculty to die in the past two years.

s/T. LLOYD JONES, *Principal.*

Oregon

Marion County Association.—On October 12, the Marion County Veterinary Medical Association met at the Senator Hotel in Salem for the first of their monthly dinner meetings. **Dr. G. F. Schwenke**, president, presided. **Dr. Austin W. Eivers**, who was in charge of the program,

introduced **Dr. Sam Osgood,** M.D., Oregon State Health Department, who spoke on "Equine Encephalomyelitis." In addition, there was a round-table discussion on control of bovine leptospirosis.

s/A. W. EIVERS.

Pennsylvania

University Appoints Dr. G. W. Rake, Research Professor of Microbiology in Medicine and Veterinary Medicine.—The University of Pennsylvania announced, on October 21, that Geoffrey William Rake, M.B., B.S., had been appointed to the dual position of research professor of microbiology in medicine in both the School of Medicine and School of Veterinary Medicine. He comes to the University from the Squibb Division of the Methieson Chemical Corporation where he had been associated for the past sixteen years.

Dr. Rake received his M.B. and B.S. degrees from the University of London in 1928, served at Guy's Hospital for a time, and then came to the United States where he was associated with Johns Hopkins Hospital and later the Rockefeller Institute.

The dual appointment in the medical and veterinary schools is unique and was made in recognition of the growing importance of preventive medicine in combating diseases affecting both animals and man, and the emphasis the University is placing on such studies.

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Keystone Association.—**Dr. William G. Magrane,** AVMA Research Council fellow, who is doing postgraduate work at the University Graduate School of Medicine, gave an illustrated lecture on "glaucoma" at the Keystone Veterinary Medical Association meeting at the veterinary school on Wednesday evening, October 28.

s/RAYMOND C. SNYDER, *Secretary.*

Rhode Island

New England Association.—On Oct. 18-20, 1953, the New England Veterinary Medical Association held its nineteeth annual convention in the Hotel Viking in Newport, R. I.

The following speakers participated in the program: **Drs. Frank Bloom,** Flushing, N. Y.; **David L. Coffin,** Angell Memorial Animal Hospital, Boston, Mass.; **C. E. DeCamp,** Pitman-Moore Co., New York City; **D. D. Delahanty,** New York State Veterinary College, Ithaca; **L. H. Esterbrooks,** University of Connecticut, Storrs; **W. J. Gibbons,** Alabama Polytechnic Insititute, Auburn, Ala.; **Seth D. Johnson,** field veterinarian, regional mastitis control, Ithaca, N. Y.; **E. L. Jungherr,** University of Connecticut, Storrs; **Brig. Gen. James A. McCallam,** Washington, D. C., president of the AVMA; **Drs. Robert McClelland,** Buffalo, N. Y.; **George L. Ott,** Ph. D., Fromm Laboratories, Grafton, Wis.; **Wayne H. Riser,** Skokie, Ill.; **Paul M. Runge,** M.D., Boston, Mass.; **Edwin Terry,** Philadelphia, Pa.; and **Elmer A. Woelffer,** Oconomowoc, Wis.

s/C. L. BLAKELY, *Secretary.*

Texas

Dr. Evans Appointed to Regional Educational Board.—Dr. Edward B. Evans (ISC '18) president of Prairie View State College, Prairie View, was recently appointed, by Governor Allan Shivers, to a four-year term as a member of the Board of Control of the Southern Regional Education Board. Dr. Evans recently spoke to the Houston Veterinary Medical Association on his trip to Ethiopia.

West Virginia

State Association.—The annual meeting of the West Virginia Veterinary Medical Association was held Oct. 4-5, 1953, at the Daniel Boone Hotel in Charleston. The following speakers participated in the program: **Mr. Marvin Snyder,** chief chemist, West Virginia Department of Agriculture; **Drs. Roy Hoffman,** Bedford, Pa.; **T. C. Green,** state veterinarian, Charleston; **Walter E. Carlson,** Grafton, Wis.; **James P. Bailey,** Bluefield, Va.; and **James H. Steele,** chief veterinarian, U. S. Public Health Service, Atlanta, Ga.

Members and their wives enjoyed the annual banquet in the Daniel Boone ballroom.

The new officers of the Association are: Drs. V. H. Miller, Charleston, president; James F. Mann, Lewisburg, president-elect; and E. R. Coon, Charleston, secretary-treasurer.

Veterinary problems are discussed by officers of the West Virginia Veterinary Medical Association. They are (seated left to right)—Drs. E. R. Coon, secretary-treasurer; V. H. Miller, president; James P. Bailey, past-president; James F. Mann, president-elect. Standing—Drs. Harry J. Fallon, member of the executive board; and Norman Olson.

s/E. R. COON, *Secretary.*

Wyoming

Dr. Kingman Retires from Wyoming Hereford Ranch.—Dr. H. E. Kingman, Sr., for some nineteen years veterinarian in charge of the health of the livestock on the famous Wyoming

Dr. H. E. Kingman, Sr.

Hereford Ranch at Cheyenne, has retired. Most veterinarians with his record of accomplishment, plus his previous teaching work at Colorado A. & M. College, would be content to retire *per se*. Dr. Kingman, who intends to reside near Blue Ridge, Ga., not far from the home of one of his sons, will still be available for consultation and lecture work in the veterinary schools; his present address is Ducktown, Tenn.

Dr. Kingman has gained world-wide prominence in the field of bovine fertility. During his stay at the Wyoming Hereford Ranch, he established a laboratory and did considerable work on insemination and the checking of the sterility of bulls. The health record of this famous herd, especially in regard to tuberculosis and brucellosis, favorably reflects Dr. Kingman's ability. Dr. Ernest D. Barrows (COL '39) is replacing Dr. Kingman at the ranch.

s/J. F. RYFF, *Secretary, Wyoming V.M.A.*

Washington

State Association.—The Washington State Veterinary Medical Association held its annual meeting at Yakima on Oct. 2-3, 1953.

Many fine papers were presented to the group. The following men were speakers on the program: **Drs. Clifford Bjork,** Portland, Ore.; **Dean Fluharty,** State College of Washington, Pullman; **A. E. Crouse,** supervisor of dairy and livestock at Olympia; **William Harris,** Puyallup; **H. J. Hill,** head of the Department of Artificial Insemination, Colorado A. & M. College, Fort Collins; **Sam Kenzy,** Washington State College; **T. R. Kurtz,** Seattle; **Leighton Bailey,** Meat Inspection Division, City of Spokane; **John Stevens,** Sequim; **Herbert J. Stoenner,** Department of Agriculture, Olympia; **Fred Shigley,** inspector in charge, BAI, Olympia; and **Harold Warsinske,** Stanwood.

At the business meeting, the following men were elected to office for the coming year: Drs. James Kraft, Seattle, president; Don Clarke, Seattle, vice-president; J. L. Ellis, Olympia, secretary-treasurer; and the following trustees: Drs. Robert Prior, Prosser; Phil Millard, Everett; G. Staggs, Tacoma; John Stevens, Sequim; and T. Robert Phelps, Vancouver.

The board will meet in the near future to appoint the following men to the board of trustees: Drs. E. C. Stone to represent the College of Veterinary Medicine; A. E. Crouse to represent the State Department of Agriculture, diary and livestock division; and Fred Shigley to represent the Bureau of Animal Industry in this area.

Dr. Peter MacKintosh was elected to be the Washington delegate to the AVMA for the next four years, and Dr. T. Robert Phelps was elected alternate.

s/J. L. ELLIS, *Secretary.*

FOREIGN NEWS

Peru

Dr. Figueroa Visits in the United States.—Dr. Juan Figueroa (OSU '44) visited in the United States in September on his way from the International Veterinary Congress at Stockholm to his home in Peru. Dr. Figueroa is president of the Peruvian Veterinary Medical Association and professor of Animal Husbandry at the only veterinary college in Peru, at the University of San Marcos.

As in many foreign countries, the subjects of animal husbandry and veterinary medicine are taught and applied jointly.

Sweden

Cattle Breeding in Sweden.—Forty per cent of the agricultural income in Sweden is from milk and dairy products and 25 per cent of the cows in southern Sweden are artificially inseminated. Efficient veterinary service and strict veterinary control has resulted in Sweden being almost free from infectious cattle diseases. Infection with tuberculosis or brucellosis amounts to not over 0.1 per cent. The country has been free of foot-and-mouth disease since Feb. 2, 1953.—*Medlemsblad. Congress Number, 1953.*

MARRIAGE

Dr. Norman Sax (OSU '50) of South Gate, Calif., and Miss Sally Winnick of Los Angeles, Calif., were married Aug. 15, 1953. They spent their honeymoon at Lake Tahoe, Nev.

BIRTHS

Dr. (MIN '53) and Mrs. Donald M. Oolman, Jasper, Minn., announce the birth of a daughter, Cynthia Joy, on Sept. 21, 1953.

Captain (KSC '45) and Mrs. LaVerne Harold, Shawnee, Kan., announce the birth of a son, Roger Verne, on Sept. 4, 1953.

DEATHS

Joseph L. S. Anderson (ONT '41), Guelph, Ont., died Oct. 7, 1953, after a lengthy illness. An obituary appears on page 559 of this JOURNAL.

★**Clarence L. Barnes** (COR '00), 77, Poughkeepsie, N. Y., died April 3, 1953. Dr. Barnes had taught on the faculty of the School of Veterinary Medicine, Kansas State College, and had served as state veterinarian in New York. He was a member of the AVMA for forty years.

★**Harry B. Belmar** (CVC '15), 65, Dothan, Ala., died Sept. 26, 1953. At the time of his death, Dr. Belmar was serving as president of the Houston County Veterinary Medical Association. He was also a member of the Alabama Veterinary Medical Association and of the AVMA, and was active in the Dothan Health Department, where he did an outstanding job in sanitation and meat inspection.

★**Beck B. Bowen** (STJ '18), 63, St. Joseph, Mo., died Oct. 5, 1953. Dr. Bowen was employed by the U. S. Bureau of Animal Industry. He was a member of the National Association of Federal Veterinarians and of the AVMA.

Jesse W. Bushong (UP '08), 77, West Grove, Pa., died Aug. 12, 1953. Dr. Bushong was a general practitioner. He had been a member of the AVMA.

William A. Davidson (KCV '07), 82, Spokane, Wash., died Jan. 21, 1953. Dr. Davidson, who had served since 1907 with the U. S. Bureau of Animal Industry, retired in 1941, but when World War II began, he reëntered the service as inspector in charge of the stockyards at Sand Point, Idaho. He retired again in 1945, and moved to Hope, Idaho, where he raised fruit and flowers. He had gone to Spokane for the winter when he became ill. Dr. Davidson, who had been a member of the AVMA from 1913 to 1945, is survived by his widow.

Marvin J. Durrant (ISC '34), Dows, Iowa, died in August, 1953. Dr. Durrant was a general practitioner.

Joseph P. Gerety (UP '10), Philadelphia, Pa., died Aug. 7, 1953.

John P. Homiller (UP '18), Newtown, Pa., died Sept. 3, 1953. Dr. Homiller was a general practitioner.

★**Cheston M. Hoskins** (UP '11), 63, Philadelphia, Pa., died Sept. 3, 1953. Dr. Hoskins, a general practitioner, served in the Veterinary Corps of the U. S. Army during World War I. He was admitted to the AVMA in 1912.

Orion B. Huston (KCV '08), 81, Warrensburg, Mo., died June 26, 1953. Dr. Huston joined the U. S. Bureau of Animal Industry in 1908 and served as meat inspector in various cities until 1932 when he retired to accept the position of meat inspector for Kansas City, Mo. Dr. Huston is survived by his widow.

★**John W. Knapp** (COR '31), 44, Litchfield, Conn., died Sept. 18, 1953. Dr. Knapp, a general practitioner, was a member of the Connecticut Veterinary Medical Association and of the AVMA.

★**William J. LaFrance** (COR '33), 44, Binghamton, N. Y., died July 28, 1953. Dr. LaFrance was admitted to the AVMA in 1939. He is survived by a brother, Dr. John LaFrance (COR '22) of Binghamton, N. Y.

Newton A. McCosh (KSC '17), Randolph, Kan., died June 19, 1953. For many years, Dr. McCosh was in general practice, but for the past few years he held a commission, on an active basis, in the Veterinary Corps of the U. S. Army. He is survived by his widow and one daughter.

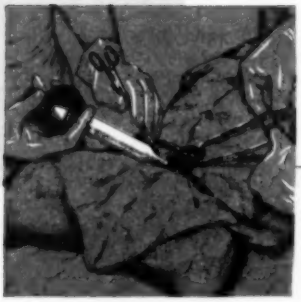
Clyde C. Oldham, Jr. (TEX '44), 30, Mexico City, Mex., died Oct. 10, 1953. Dr. Oldham was employed by the U. S. Bureau of Animal Industry.

Cleon O. Tackwell (KSC '38), Junction City, Kan., died Sept. 19, 1953. Dr. Tackwell was a general practitioner, and had recently completed a small animal hosiptal. He is survived by his widow.

David D. Tobias (CVC '10), 70, Grand Rapids, Mich., died July 31, 1953. Dr. Tobias served for a few years as state veterinarian of Nebraska and later was a partner of the Tobias and Cairy distributing agency at Sioux City, Iowa, for many years.

Harry U. Williams (STJ '17), 69, Yerington, Nev., died Oct. 18, 1953. After practicing in Colorado, Wyoming, and California, Dr. Williams located at Yerington in 1931, where he lived and practiced up to the time of his death. He is survived by his widow and two stepsons.

★Indicates members of the AVMA.



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PROFESSIONAL LITERATURE AVAILABLE ON REQUEST

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COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

Nebraska Veterinary Medical Association. Annual meeting. Lincoln, Neb., Dec. 1-3, 1953. G. A. Ackerman, 319 L St., Lincoln, Neb., chairman, program committee.

Animal Care Panel. Annual meeting. Billings Hospital, University of Chicago, Chicago, Ill., Dec. 2-3, 1953. The program will be ready for distribution in September and may be obtained by writing to Robert J. Flynn, Secretary, Animal Care Panel, Argonne National Laboratory, P. O. Box 299, Lemont, Ill.

Kentucky Veterinary Medical Association. Short course for veterinarians. Department of Animal Pathology Building, University of Kentucky, Lexington, Ky., Dec. 2-3, 1953. T. J. Stearns, Room 216, Live Stock Exchange Bldg., Louisville, Ky., secretary.

Arizona Veterinary Medical Association. Annual meeting. Phoenix, Ariz., Dec. 3-4, 1953. G. S. Calderwood, Chandler, Ariz., secretary.

Maryland State Veterinary Medical Association. Annual winter meeting. Lord Baltimore Hotel, Baltimore, Md., Dec. 4-5, 1953. John D. Gadd, Cockeysville, Md., secretary.

Delaware Veterinary Medical Association. Annual meeting. Dec. 10, 1953, Wilmington, Del. E. F. Waller, Newark, Del., secretary.

University of Pennsylvania. Annual conference for veterinarians. University of Pennsylvania, School of Veterinary Medicine, Philadelphia, Pa., Jan. 5-6, 1954. Walter E. LaGrange, chairman, conference committee.

New York State Veterinary College. Annual conference for veterinarians. New York State Veterinary College, Cornell University, Ithaca, N. Y., Jan. 6-8, 1954. W. A. Hagan, dean.

Ohio State Veterinary Medical Association. Annual meeting. Deshler-Hilton Hotel, Columbus, Ohio, Jan. 6-8, 1954. William S. Konold, 50 E. Broad St., Columbus 15, Ohio, executive secretary.

Oklahoma Veterinary Medical Association. Winter meeting. Mayo Hotel, Tulsa, Okla., Jan. 11-12, 1954. D. H. Ricks, 122 Capitol Building, Oklahoma City, Okla., secretary.

Tennessee Veterinary Medical Association. Annual meeting. Nashville, Tenn., Jan. 11-12, 1954. H. W. Hayes, 734 Broadway, Knoxville, Tenn., secretary.

Indiana Veterinary Medical Association. Annual meeting. Hotel Severin, Indianapolis, Ind., Jan. 13-15, 1954. W. W. Garverick, Zionsville, Ind., secretary.

Ontario Veterinary Association. Annual meeting. Royal York Hotel, Toronto, Ont., Jan. 14-16, 1954. G. A. Edge, Box 37, Postal Station "F", Toronto, Ont., secretary.

Mississippi State Veterinary Medical Association. Annual meeting. Jackson, Miss., Jan. 17-19, 1954. John A. Randle, 122 Commerce St., West Point, Miss., secretary.

Intermountain Veterinary Medical Association. Annual meeting. Newhouse Hotel, Salt Lake City, Utah, Jan. 18-20, 1954. A. P. Schneider, Boise, Idaho, director, BAI.

Kansas State Veterinary Medical Association. Annual meeting. Broadview Hotel, Wichita, Kan., Jan. 18-20, 1954, K. Maynard Curts, Kansas City, Kan., secretary.

Iowa Veterinary Medical Association. Annual meeting. Hotel Fort Des Moines, Des Moines, Iowa, Jan. 19-21, 1954. F. B. Young, Waukee, Iowa, executive secretary.

Texas Veterinary Medical Association. Annual meeting. Hotel Galvez, Galveston, Texas, Jan. 24-26, 1954. Alvin A. Price, College Station, Texas, executive secretary.

California State Veterinary Medical Association. Midwinter convention. Veterinary Science Building, University of California, Davis, Calif., Jan. 25-27, 1954. A. M. McCapes, Box 726, San Luis Obispo, Calif., program chairman.

Minnesota State Veterinary Medical Society. Annual meeting. St. Paul Hotel, St. Paul, Minn., Jan. 25-27, 1954. B. S. Pomeroy, St. Paul, Minn., secretary.

North Carolina Veterinary Medical Association. Annual conference for veterinarians. North Carolina State College, Raleigh, N. Car., Jan. 27-29, 1954. C. D. Grinnells, chairman.

Louisiana State University. Annual conference for veterinarians. Louisiana State University, Baton Rouge, La., Feb. 3-4, 1954. W. T. Oglesby, Department of Veterinary Science, chairman.

Illinois State Veterinary Medical Association. Annual meeting. Morrison Hotel, Chicago, Ill., Feb. 10-12, 1954. A. G. Misener, 6448 N. Clark St., Chicago 26, Ill., secretary.

Colorado A. & M. College. Annual conference for veterinarians. Glover Veterinary Hospital, School of Veterinary Medicine, Colorado A. & M. College, Feb. 15-17, 1954. O. R. Adams, director of veterinary clinics.

Missouri Veterinary Medical Association. Annual meeting. Hotel Continental, Kansas City, Mo., Feb. 22-23, 1954. Paul L. Spencer, P.O. box 283, Jefferson City, Mo., secretary.

Texas Conference on Diseases in Nature Transmissible to Man. Annual conference. A. & M. College of Texas, College Station, Texas, April 12-13, 1954. John P. Delaplane, A. & M. College of Texas, College Station, Texas.

American Animal Hospital Association. Annual meeting. Hotel Statler, New York, N. Y., May 5-8, 1954. Wayne H. Riser, 5335 Touhy Ave., Skokie, Ill., secretary.

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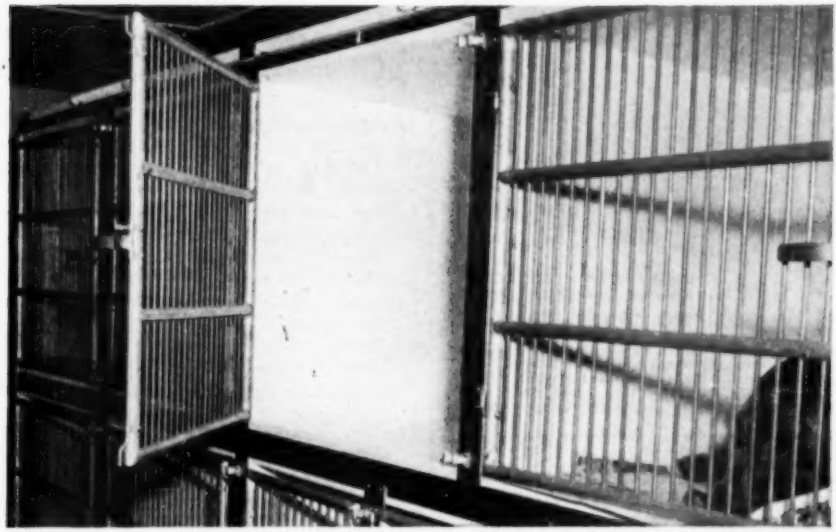

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(COMING MEETINGS—*continued from p. 28*)

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. David E. Madsen, 44 South 4th St., San Jose, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month (except July and August) at Black's Tea Room, Waterloo. F. E. Brutsman, Traer, Iowa, secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. W. E. Smith, 516 Oatman, Sanger, Calif., secretary.

Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. Mr. Earl D. Adams, Greensboro, N. Car., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Coastal Bend Veterinary Association (Texas), the second Wednesday of each month. J. E. Hoban, 4301 S. Port Ave., Corpus Christi, Texas, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. J. R. Rosdail, Pomeroy, Iowa, secretary.

Cuyahoga County (Cleveland, Ohio) Veterinary Medical Association, the first Wednesday of each month—September through May (except January)—at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Roger W. Grundish, 4217 Mayfield Road, South Euclid 21, Ohio, secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. Robert Clemens, 23352 Orchard, Hayward, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville, Fla.

Greater St. Louis Veterinary Medical Association, the first Friday of the month at the York Hotel, Sixth and Market Streets. Luther E. Fredrickson, Room 11, Municipal Courts Bldg., St. Louis, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month.

(*Continued on p. 32*)

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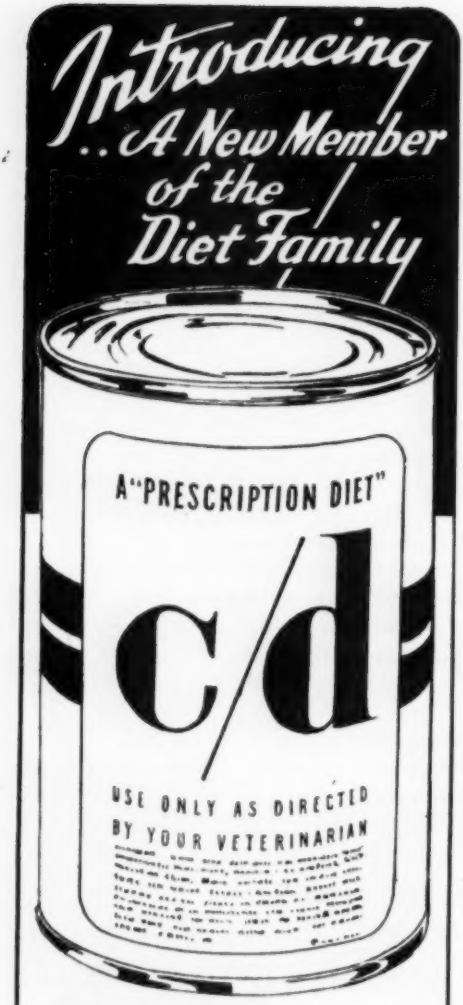

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(COMING MEETINGS—*continued from p. 30*)

Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Sunday evening of even-numbered months at the Jefferson Hotel, Peoria, Ill. S. M. McCully, Lacon, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. E. M. Lang, 716 E. Broadway, Louisville, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. T. M. Eagle, Parkville, Route 2, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, in the Hotel Continental, 11th and Baltimore, Kansas City, Mo. K. M. Curts, 70 Central Ave., Kansas City 18, Kan., secretary.

Kern County Veterinary Medical Association, the first Thursday of each month. Richard A. Stiern, 17 Niles St., Bakersfield, Calif., secretary.

Keystone Veterinary Medical Association, the Philadelphia County Medical Society Building, 301 S. 21st Street, Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

Kyowva Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Karl Mayer, 1531 Fourth Ave., Huntington, W. Va., secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Prchal, 1722 East Almeria Road, Phoenix, Ariz., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from September through May, at the Academy of Medicine of Northern New Jersey, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Millburn Ave., Maplewood, N. J., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month, at Hotel LaSalle, South Bend, Ind. Bruce Hostrawser, 2621 Mishawaka Ave., South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

(*Continued on p. 34*)

Generations of success have built confidence in the True-Type meal!

IT'S NO SECRET among people who raise dogs for a living that Friskies is *one* dog food that has proven itself over and over!

AND IT'S NOT SURPRISING! For Friskies—a *true-type* meal backed by Albers 50 years' experience in animal nutrition—has been fed successfully and thoroughly tested with generations of dogs!

FRISKIES combines 19 separate, high-quality ingredients... chief of which is meat meal and bone meal...in a complete food that provides variety at every meal. Watch how your dogs enjoy its "meaty" smell and taste!

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TESTED FOR GENERATIONS! Friskies – based on Albers 50 years' experience in animal nutrition – has been checked and tested on dogs of all sizes and types. At the Friskies Kennels on the famous Carnation Milk farm, generations of healthy, happy dogs have been raised on a diet of Friskies *alone*.

FRISKIES CUBES... in the same famous formula as meal... are crunchy, bite-sized morsels that exercise your dog's teeth and gums. No mixing is required. Nothing to add–not even water!

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100-lb. bags
50-lb. blocks
4-lb. liks

International Salt Co., Inc.
Scranton, Pa.

(COMING MEETINGS—*continued from p. 523*)

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. George McCollister, 2146 Broad St., San Luis Obispo, Calif., secretary.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month at the Hotel Admiral Simmes, Mobile, Ala. C. Eric Kennedy, Mobile, Ala., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 66 Marion Ave., Salinas, Calif., secretary.

New Castle County Veterinary Society, the second Wednesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Harold Roberts, Paper Mill Road, Newark R3, Del., secretary.

New York City, Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63 St., New York City. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern Colorado Veterinary Medical Association, the second Monday of each month. William D. Carlson, P.O. Box 478, Fort Collins, Colo., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday evening from September through June, at the Casa Mana Restaurant, Cedar Lane, Teaneck, N. J. Robert R. Shomer, 1680 Teaneck Road, N. J., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. Tom Hagan, Gen. Del., Escalon, Calif., secretary.

Oklahoma County Veterinary Medical Association, the second Wednesday of every month except July and August. W. C. Schilb, 4312 N. W. 23rd St., Oklahoma City, Okla., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month at 7:00 p.m. in the Antlers Hotel, San Bernardino, Calif. R. E. Hoadley, Coachella, Calif., secretary.

Orange County Veterinary Medical Association, bi-monthly. Donald E. Lind, 2643 N. Main, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. P. H. Hand, Box 1035, Millbrae, Calif., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in

(*Continued on p. 561*)

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Mull's Motel in Hickory, N. Car. G. V. McCranie, Hickory, N. Car., secretary.

Pima County (Arizona) Veterinary Medical Association, the third Wednesday of each month, in Tucson. R. W. Adami, 2103 S. 6th Ave., Tucson, Ariz., resident secretary.

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. Victor T. Oliver, 9705 S.W. Barbur Blvd., Portland 19, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. H. M. Strandberg, 203 D St., Petaluma, Calif., secretary.

Roanoke-Tar (N. Car.) Veterinary Medical Association, the first Friday of each month, time and place specified monthly. C. B. Randall, Kinston, N. Car., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. S. M. Foster, 430 College, Woodland, Calif., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. F. Ferguson, 1702 S. Dort Highway, Flint, Mich., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. Warren J. Dedrick, 904 S. Lemon, El Cajon, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, Friday evenings every sixth week. Dee Wodars McDermott, 5879 Hollister, Coleta, Calif., secretary.

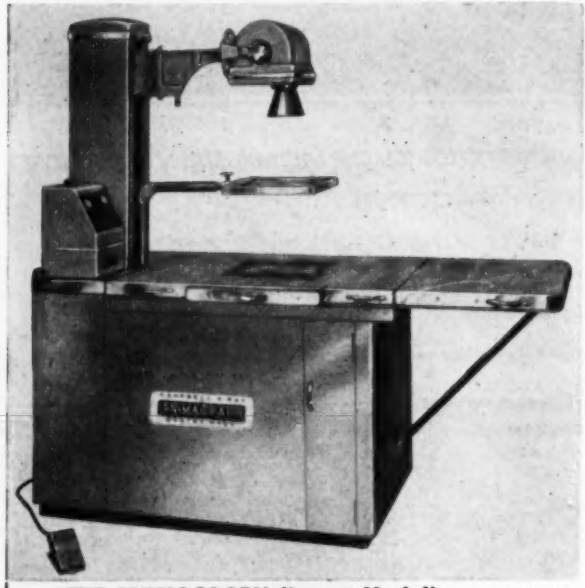
Southern California Veterinary Medical Association, the third Wednesday of each month. R. W. Sprowl, 11756 San Vicente Blvd., Los Angeles 49, Calif., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. A. Majilton, 1093 N. E. 79th St., Miami, Fla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.

Foreign Meetings

Second Pan American Congress of Veterinary Medicine. Sao Paulo, Brazil, April 3-10, 1954. Dr. Joao Soares Veiga, chairman; Dr. Virginia Buff D'Apice, secretary general, P.O. Box 7064, Sao Paulo, Brazil.



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(*Continued on p. 40*)

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Sulfapyridine 4%

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(13% total sulfonamide—2 grains per cc.)

The Original Triple Sulfa Parenteral Solution for Veterinary Use

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(CLASSIFIED ADS—*continued from p. 38*)

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Veterinarian wanted to assist in mixed practice in Montana. Good starting salary. Opportunity for interest in business; must be anxious to work. Give full details in first letter. Address "Box R 12," c/o JOURNAL of the AVMA.

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Woman, graduate approved school, small animal experience, seeks position in small animal or mixed practice leading to partnership or purchase. Address "Box P 4" c/o JOURNAL of the AVMA.

Licensed veterinarian, age 34, married, experience in large and small animal practice, desires position with practitioner in Connecticut or Massachusetts. Address "Box P 12," c/o JOURNAL of the AVMA.

Small animal practitioner wants assistantship in small animal practice leading to partnership or purchase of practice in Middlewest. Married; veteran. Address "Box R 7," c/o JOURNAL of the AVMA.

(*Continued on p. 42*)

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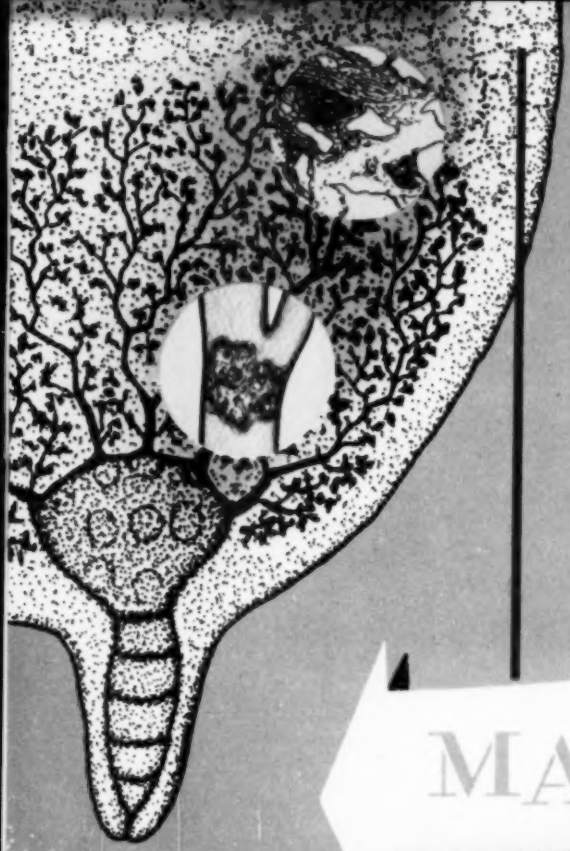

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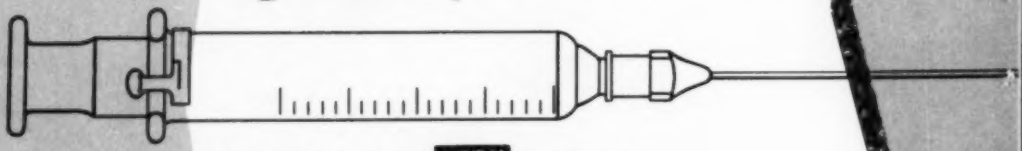

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1. Shaw, J. C., et al.: The North American Veterinarian, 251-256, April, 1953.

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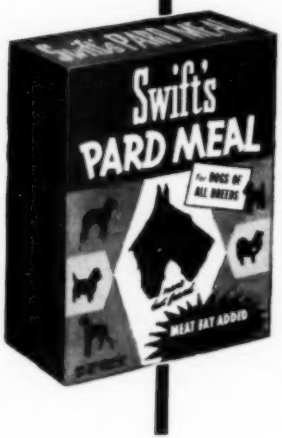

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Swift's Pard Meal contains extra amounts of rich meat fat for flavor, super-energy and fuller nutrition. It won't flake or powder and won't turn rancid. And it's *complete*, the most complete dry-type dog food on the market today!

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PARD is Swift's famous canned dog food. Here is the "pioneer" product of them all—for 20 years leading the way to today's high level of nutritional excellence in commercial dog foods. A dog needs nothing more—you can recommend nothing better than Pard.

Provides an accurate pattern against which to cut with knife or razor blade. Fits firmly, cannot move or slip when clamped into position. Made of non-rusting, light, cast aluminum, highly polished. Lasts a lifetime with minimum care. Simplicity of design and construction reduces possibility of breakage or mechanical failure. Forms immediately available to provide distinctive marking of these breeds:

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(CLASSIFIED ADS—*continued from p. 40*)

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Veterinarian desires location or position with a future in the Southeast. Address "Box R 15," c/o JOURNAL of the AVMA.

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(*Continued on p. 44*)

New Editor, Norden News

Lyle E. Ashelford, B.Sc., formerly in charge of public relations, College of Veterinary Medicine, University of Illinois, is the new editor of the *Norden News* and advertising manager of Norden Laboratories.

Born in Illinois in 1922, Mr. Ashelford attended Cornell College of Iowa for two years and served three years in the U.S. Army, principally in China, Burma, and India. He received his B.Sc. degree in journalism from the University of Illinois in 1947 and joined the Illinois veterinary college staff in editorial and public relations work for six years. He was granted military leave to serve in the Korean conflict from December, 1950, to September, 1951.

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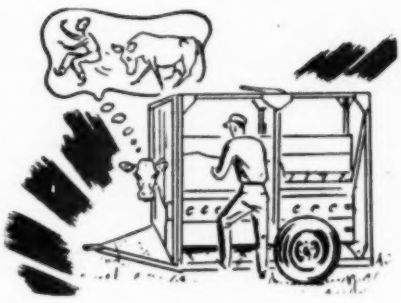

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(*Continued on p. 46*)

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* *Beta Ray Therapy in Ocular Diseases of Animals,* Catcott, et al; Journal A.V.M.A., March, 1953; p. 172-175.

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(CLASSIFIED ADS—*continued from p. 44*)

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(*Continued on p. 48*)

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(*Continued on p. 54*)

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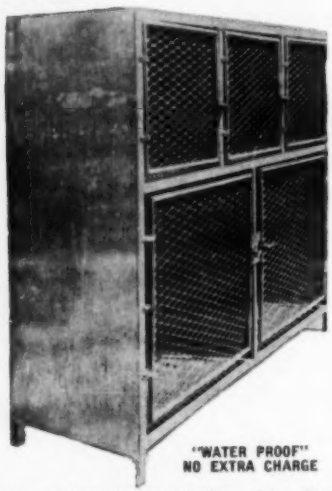

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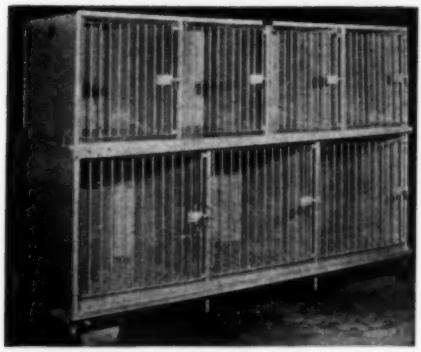

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Correspondence

Oct. 6, 1953

The Editor:

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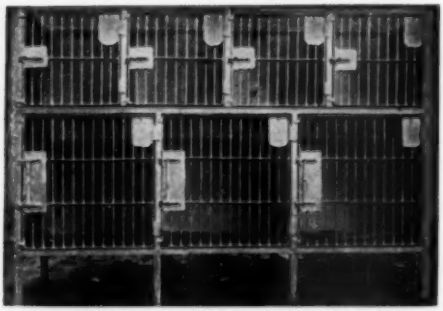
Very truly yours,

Henry E. Grossman, D.V.M.
Chairman, Public Relations Committee,
New York State V.M.A.,
1300 Flatbush Ave.,
Brooklyn 10, N.Y.

P. S. This material must be authentically that of 1840 vintage or thereabouts, of course.



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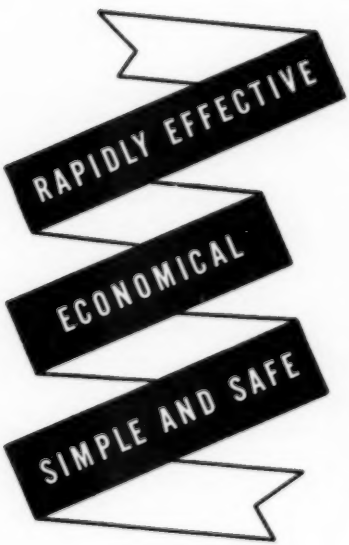

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Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the Journals with a minimum of reduction. Photomicrographs which cannot be reduced should be marked for cropping to 1-column or 2-column width. Drawings should be made clearly and accurately in India ink on white paper. Figures appearing on graphs or charts should be large enough to allow for reduction necessary for the chart or graph to fit on Journal pages. All illustrations should bear the name of the author on the back.

Tables.—Tables should be simple and typed **double-space.** Complex tables are not conducive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

News.—Secretaries of associations and readers are requested to send us announcements of meetings and news items.

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(CLASSIFIED ADS—*continued from p. 48*)

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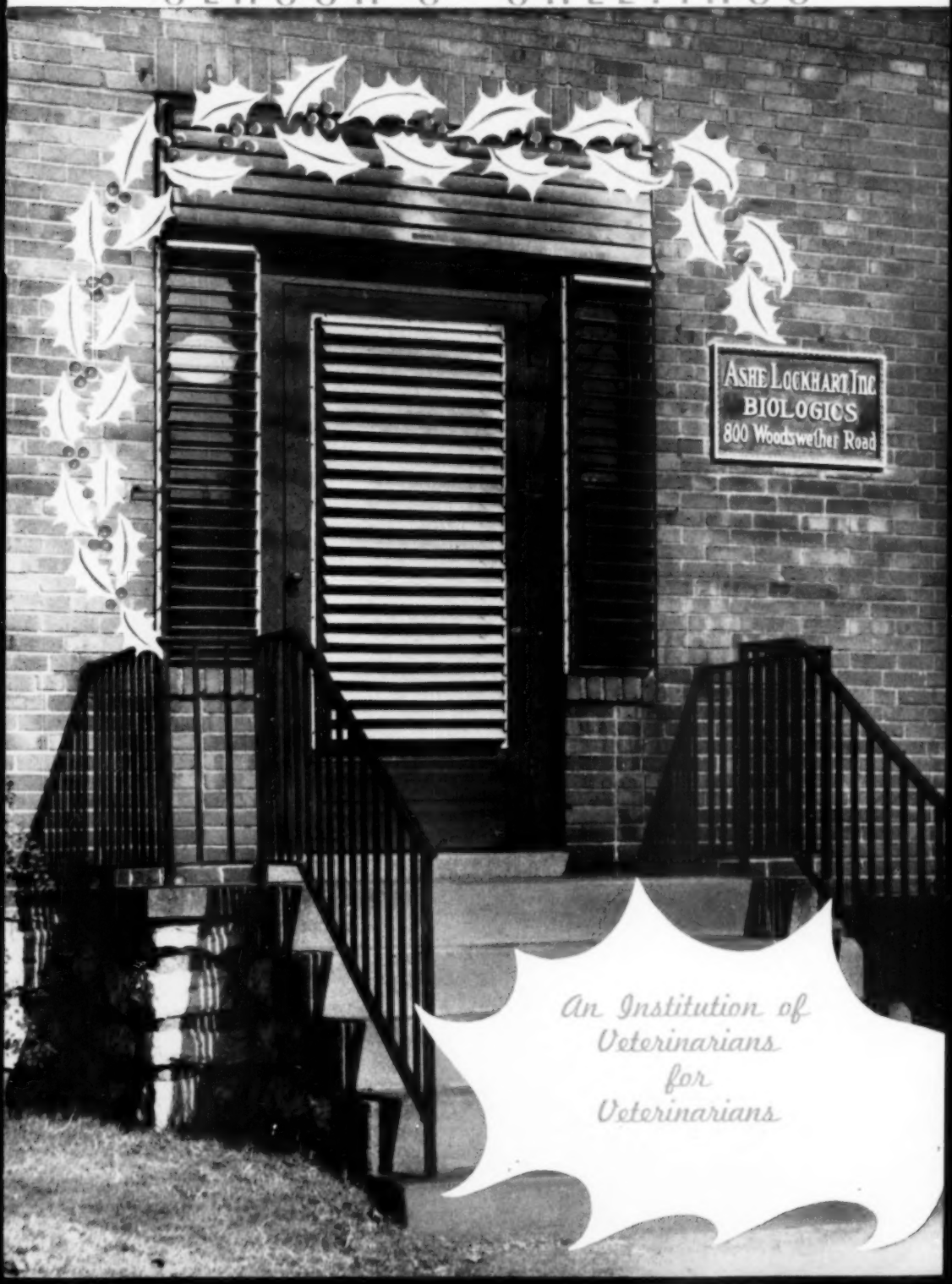

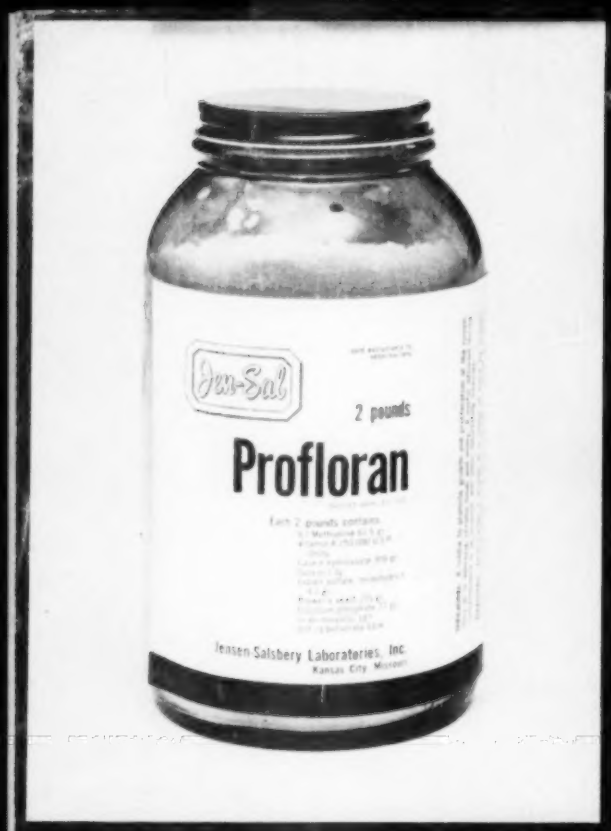

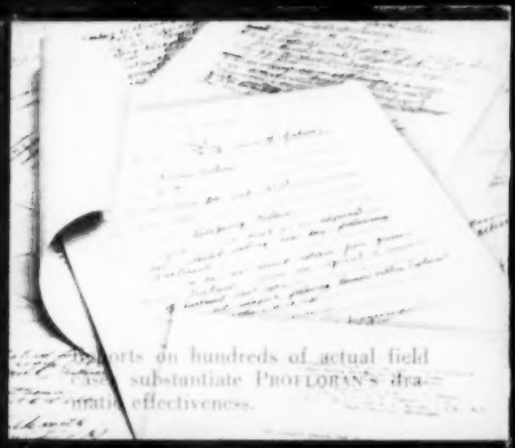

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